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SOME CAUSES OF STERILITY AND IMPOTENCE IN THE MALE *

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As the body-growth ceases in adolescence, the nutritive surplus no longer used in growth overflows periodically through the genital organs. Thus during the week preceding the menstrual flow, a woman's weight increases from 3 to 7 pounds, this increment being lost soon after the advent of the flow. In certain lower animals the discharge of ova and spermatozoa is as plainly excretory as is the voiding of urine in higher forms; even in frogs and fishes the testis discharges its spermatozoa and the kidney its urine through one and the same channel; in the very king of beasts, man himself, while the kidney is provided with a new and private sewer, the ureter, the testis continues to use the frog's old urinary duct, now called epididymis and vas deferens. This excretory function of the testis and its duct illumines both its intimate alliance with the kidney and its frequent infection from the blood.

That the formation of spermatozoa by the testis is unnecessary to the normal life of the individual is proved by the human subjects of bilateral retention of the testes, who exhibit normal masculinity including sexual desire and power, although their testes produce no spermatozoa. Many other familiar observations show that the essential value of the testis to the individual is not spermatogenesis, but the transformation of overgrowth into energy. Spermatogenesis waxes and wanes with the animal's nutritive surplus; it ceases during starvation but is excessive in the overfed barnyard fowl and in the human glutton; it is absent in many animals during the winter though active in the warmer months; it ceases in many wild animals while imprisoned indoors, but is revived by an outdoor life.

This secondary function of the testis, spermatogenesis, may be arrested by influences too slight to disturb the primary function, namely, the energizing of the animal. Thus a certain exposure of the testis to the *x*-ray arrests spermatogenesis without impairing general nutrition or sexuality. The replacement of a dog's testes into the abdomen does not impair his sexual power, but abolishes the production of spermatozoa. Moreover, certain influences which arrest spermatogenesis do not prevent ovulation; thus, after transplantation of ovary or testis to another animal, ova may ripen but spermatozoa are not produced. In my studies on the sterility of mules it was found that while both male and female exhibit sexuality, yet the testes of the one never produce spermatozoa, while the ovaries of the other may furnish mature ova. Iwanoff in Paris has observed that the male offspring from the union of American buffalo bulls with domestic cows are sterile, because their testes, like those of the mule, fail to produce spermatozoa; the female offspring of such union, however, are fertile by buffalo bulls. The male offspring of this latter union (three-fourths bison) produce spermatozoa.

The fact, by the way, that the adult testis transplanted into a castrated animal, while failing to produce spermatozoa, nevertheless preserves the sexual desire and power of the castrate, suggests a more promising method of conserving sexuality in the human subject than Brown-Séquard's orchitic extract. It might be as successful as has been the continuance of menstruation in castrated women by transplanted ovaries, abundantly demonstrated by Tuffier and others.

My apology for exploiting this familiar topic is a desire to dispel the still prevalent delusion that spermatogenesis is the essential function of the testis; that vasectomy or damage to the ejaculatory ducts during perineal prostatectomy impairs sexual power by preventing the discharge of spermatozoa. The facts cited and many others prove that neither the discharge nor even the production of spermatozoa is necessary to sexuality. The investigation of childlessness should begin not with the curettage of the wife, but with microscopic inspection of the husband's semen. That the testes of a sexually vigorous man may produce no spermatozoa was proved in a patient in whom I opened the caput epididymis and expressed the contents of the rete testis without finding spermatozoa. It is certain that blood-infections, including mumps and typhoid, may destroy spermatogenesis without impairing masculinity; and there is reason to believe that sterility thus produced is not rare.

CONSERVATION OF ENERGY BY INTERSTITIAL CELLS

What becomes of the energy destined for incarnation in spermatozoa, when the production of these is prevented by retention of the testis or other local influence? Such testes invariably present one striking feature, namely, a pronounced increase in the number and size of the interstitial cells. Whatever be the local agency which arrests spermatogenesis, this exaggerated activity of the interstitial cells is evident; conversely, the resumption of spermatogenesis after the repair of damage done by the *x*-ray or other agency is accompanied by a decrease in the number and size of these cells. It seems then probable that both interstitial and tubule cells are transformers of energy; that they divide the pabulum suitable for such transformation; and that arrest of spermatogenesis by local cause, such as the *x*-ray, may preserve to the animal through the increased activity of the inter-

* Chairman's Address before the Section on Genito-Urinary Diseases of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912; read in the Symposium on Genital Pathology and Surgery.

stitial cells some of the energy otherwise expended in spermatozoa. Many clinical observations support this suggestion; for example, a stallion 4 years old was castrated, two normal testes being removed from the scrotum. His sexual vigor continued undiminished, and he became unmanageable; finally an abdominal exploration was made and a third testis found and removed, after which the animal subsided into a gelding. In this third testis there were no spermatozoa or spermatic tubules, while the interstitial cells were excessive in size and number.

VASOLIGATION

If, as many facts indicate, this speculation shall prove to be well founded, a possible means for conserving both general and sexual vigor is available. For in studying in animals the effects of ligation of the vasa, I was impressed with the excess of interstitial cells induced thereby. If the outlet of one of an animal's testes be thus closed, the other remaining open, and both be removed several months later, the interstitial cells of the occluded side are found to be distinctly more numerous than those of the other. The reason for this seems to be the reduced activity of spermatogenesis in the occluded testis. It is noteworthy that in the mule, that symbol of energy and endurance, the testis normally presents these two features—lack of spermatozoa, and exuberance of interstitial cells.

Clinical observations on this question are too few and ambiguous to be convincing. In two cases in which I ligated the vasa to arrest a true spermatorrhea and thus relieve psychic depression, the consecutive improvement in nutrition was not immediate, as might be expected from autosuggestion, but was gradual during several months. In one of these cases the ligatures were subsequently removed, whereupon spermatozoa reappeared in the seminal fluid, but not in the urine. In former years the adenomatous prostate was often reduced in size by vasectomy; and it is now similarly reduced by *x*-raying, not the prostate, but the testicles. These two measures, which produce the same results on the prostate, have just one common effect on the testis, namely, decrease of spermatogenesis and increase of interstitial cells. I might add that whenever I feel justified in occluding the vas for any purpose, I now do this with a silk ligature, not by vasectomy, over which the ligature has two advantages: first, that it surely occludes the vas, while the excision of a piece of this duct has been repeatedly followed by spontaneous restoration of its lumen in men and in dogs; second, that by tying, the canal of the vas is merely occluded, not obliterated; and it may be restored by removing the ligature—a more simple procedure than late anastomosis of the cut ends imbedded in cicatricial tissue. It would seem not only that vasoligation might properly supersede vasectomy for the permanent sterilization of defectives now authorized by seven states in this country, but also that vasoligation opens a new therapeutic field in the temporary occlusion of the vasa. The arrest of spermatorrhea and decrease of too frequent emissions have been demonstrated; increase of general and sexual vigor is still problematic.

DUCTLESS GLANDS AND TESTES

The close relation between the ductless glands and the testes is exploited in an already voluminous literature, clinical and experimental. In this multitude of undigested observations may be discerned a new field of clinical pathology and therapy. We have already learned to recognize the results of certain pronounced lesions of these glands, such as cretinism, the Fröhlich syndrome, acromegaly and certain forms of infantilism and of precocious puberty; and we have seen these morbid conditions sometimes cured by the administration of thyroid, and by operation on the hypophysis. Incontinence of urine has sometimes been arrested by thyroid substance, asthma relieved by epinephrin, deferred puberty stimulated through the reduction of a persistent thymus; and we are beginning to recognize in minor lesions of these ductless glands the pathology of certain sexual disorders which we have hitherto, through lack of knowledge, called "neuroses." That the syndrome called sexual neurasthenia, for example, commonly ascribed to abuse of the sexual function, may be produced by thyroid disease, has been repeatedly demonstrated.

Another sequence is illustrated in a case reported two years ago under the caption "retrograde puberty." This patient when 27 years old had a pulmonary abscess, followed by gradual atrophy of the testes, abolition of sexual power, loss of body hair and nocturnal polyuria. In the following twelve years no erection occurred. The symptoms suggested pituitary disease, although the *x*-ray revealed nothing abnormal in that region. After pituitary substance, thyroid and epinephrin had proved useless, the administration of adrenal substance (including the cortex as well as the medulla of the gland) was followed by marked decrease of polyuria (from 1/30 to 80 ounces daily), distinct enlargement of the atrophied testes, erections and finally cohabitation — though always without orgasm or emission. This improvement has been maintained over two years, except for brief periods when the remedy was discontinued. During such periods the polyuria increased and sexual power diminished.

This case illumines that interesting type comprising men sexually normal, except that masturbation, coitus and erotic dreams alike fail to induce orgasm or emission; it also further illustrates the synergy between the adrenal cortex and the interstitial cells of the testis, exemplified in the precocious puberty of the infant Hercules type.

TESTIS AND ITS DUCT-EXCRETORY ORGANS

The recognition of the testis as an excretory organ illumines the frequent invasion of its tubules by mumps, typhoid and colon bacilli, *Spirochæta pallida* and other blood-infections. Moreover, just as damage to the kidney tubules from blood-infection often occurs without the symptoms of acute nephritis, so the excreting tubules of the testis also may be injured without the signs of acute orchitis; in short, chronic orchitis, producing sterility and impotence, may, like chronic nephritis, result from infections of the throat, intestine or other remote region, without acute symptoms in the testis.

The human epididymis is the modified kidney of cold-blooded vertebrates; its convoluted tubules are still lined with ciliated cells identical with those of the frog's kidney. That its phylogeny inclines toward its early urinary rather than its later genital affiliation is indicated by its freedom from injury under circumstances which cause degeneration of the testis, such as hybridism and exposure to the *x*-ray. It seems plausible that this ancient kidney, the epididymis, should, like its successor, the mammalian kidney, be liable to infection from the blood-current, and that some infections of the lower seminal duct — vesicles, prostate, urethra —may proceed downward from the epididymis, just as many infections of bladder and urethra descend from the kidney. That the tuberculous infection often does thus descend from epididymis to prostate is now generally recognized; but that other infections of the genital duct pursue the same

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course is not so commonly understood. Yet there are many cases recorded in which acute pyogenic infection of the epididymis, the urethra being uninfected, has been derived from the blood. Among recent examples is Gruber's case of staphylococcus pyemia; the left epididymis, vas and vesicle were full of pus, while testicle and urethra were free from infection.

Evidently we should enlarge our conception of epididymis infections, hitherto dominated by the gonococcus, so as to recognize their frequent origin in the blood as well as in the urethra. Even anterior urethritis may be an extension of infection beginning in the upper genital tract; the urethral discharge which sometimes follows the epididymo-orchitis of mumps, even in children, is an example. Many observers have described acute non-gonococcal urethritis and speculated as to its etiology, without mentioning the possibility of a descending infection from the upper seminal duct. Acute and chronic prostatitis also may result from endogenous as well as exogenous infections.

The seminal vesicle is known to harbor gonococci for an indefinite period; it seems plausible that it, like the gall-bladder, may long harbor bacteria derived from the blood-stream. Huet has proved this for animals in which, after recovery from experimental infection, the pathogenic bacteria used were found in the vesicles even when other organs were sterile. Marchildon found the Eberth bacilli in vesicles and prostate of two patients dead from typhoid; Gould found them in fluid expressed from prostate and vesicles after recovery from typhoid.

Chronic indurations of the epididymis, without history of acute swelling, are common in elderly men, often with coexistent hydrocele. In operating for hydrocele I have in late years incised the chronically hardened epididymis, finding small pus collections and identifying streptococcus, *B. coli* and in one case the spirochete, the latter two clearly derived from the blood.

CATHETERISM OF EJACULATORY DUCTS

The pus infections of the male genital duct remained until the twentieth century practically free from surgical interference; even the accessible epididymis has always harbored gonorrheal pus, undisturbed by surgery. We now know that epididymis, vas and vesicle become infected from either end of this tube; that our usual medical treatment of these pus tubes in the male is as impotent as was the similar treatment of pus tubes in the female formerly practiced. We have learned to drain the vesicles by incision through the perineum or ischiorectal fossa; to inject medicated solutions into vas and vesicle through a vasostomy, and to incise the infected epididymis and tunica vaginalis. Yet these measures may fail to eradicate the infection in those frequent cases in which occlusion of the ejaculatory duct causes stagnation of secretions.

Catheterism of these ducts is desirable. That their minute orifices may sometimes be entered through the urethroscope was shown in 1895 by Klotz, who thus injected a liquid into the vas and epididymis. By filling vas and vesicle with milk through a vasostomy, and massaging them from the rectum, the recognition of these minute orifices is simplified; and in cases in which the duct was patulous, I have succeeded not only in repeating Klotz' success (without the epididymitis, which was averted by the vasostomy) but also in passing a filiform into the vas. With the aid of the newer urethroscopes and of vasostomy, sounding and catheterism of the ejaculatory ducts should become practicable and valuable.

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SURGICAL TREATMENT OF PROLAPSE OF THE UTERUS AND WALLS OF THE VAGINA

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In reviewing the records of St. Mary's Hospital from Sept. 30, 1889, to Sept. 1, 1912, I find that 629 women have been operated on for prolapse of the uterus. The patients coming to this hospital are largely from agricultural communities. The majority of these cases were of the more serious forms of this condition brought about by changes in the tissues, the result of repeated pregnancies aided by physical exertion due to the occupation of the patients. In all of these patients the cervix presented itself at the vulvar orifice or protruded from the vagina with more or less of the vaginal wall. In many of the senile cases the entire uterus and a large portion of the bladder and rectum composed the constituents of the prolapse.

It is a curious fact that, while erosion and ulceration of the cervix are comparatively common, there were but two cases of malignancy recorded. This observation, however, cannot be accepted for its face value, since cases of malignant disease with prolapse may have been classified only as carcinoma of the uterus. The inference is interesting as showing that chronic irritation in a cervix exposed to the air and therefore dry may not have so great an influence in the causation of adenocarcinoma as might occur under moist conditions. Both the cases which occurred in our series were epitheliomas.

These cases of prolapse can readily be classified into three groups:

The first includes those occurring during the child-bearing period, in which usually there is supravaginal hypertrophy of the cervix. This elongation may amount to from 3 to 7 inches. The vaginal face of the cervix protrudes from the vulva but the body of the uterus maintains a position in the pelvis. The resulting cystocele and rectocele are seldom of extreme degree.

The second group includes those cases ordinarily seen during the age period of from 45 to 55 years when the child-bearing function is no longer of consequence. The uterus is still of fair size.

In the third or senile group of cases will be found elderly women in whom the uterus has undergone advanced atrophy. This organ, with the cystocele and retrocele and often the entire vagina, lies outside of the body.

The cystocele is usually the most striking feature in these cases, especially those found in Groups 2 and 3. It is a condition most difficult to remedy, and one which must be remedied to cure the patient. So long as hydrostatic pressure is brought to bear on the anterior vaginal wall by urine which remains below the pubic arch, I do not know of an operation which will relieve the patient. A permanent cure can be effected only by some method which will restore the bladder to a situation above the pubic arch.

The older operations for cystocele, those of Martin[1] and Stoltz,[2] for example, have long been abandoned because the scar tissues which were formed by narrowing the vagina failed to control this phase of the condition. The secret of cure in all of these cases therefore lies in loosening up the bladder and by some means restoring it to its position in the upper pelvis and lower abdomen.

1. Martin: Medical and Surgical Gynecology, Pozzi, i, 499.
2. Stoltz: Medical and Surgical Gynecology, Pozzi, i, 508.

I. TREATMENT OF PROLAPSE DURING THE CHILD-BEARING PERIOD

Prolapse during the child-bearing period must be treated so as not to interfere with the child-bearing function. It should be remembered that many of these patients continue to bear children in spite of the prolapse.

We have found that high amputation of the cervix, not closer than one-half inch to the internal os, in connection with the external operation on the round ligaments, as originated by Alexander,[3] and with some type of perineal operation which elongates the posterior vaginal wall, will readily cure at least 96 per cent. of these patients. The cystocele is usually due to protrusion of the cervix, and since this protrusion is nearly always accompanied by supravaginal elongation of the cervix, the anterior vaginal wall, carrying with it the bladder, can be transplanted upward several inches by high amputation of the cervix. Occasionally, in amputating the cervix, we have loosened the tissues about the cervix posteriorly and laterally, exposing the uterosacral ligaments so that they could be shortened simultaneously.

Since the uterus in these cases is freely movable and comes into place readily, we prefer the external to the internal operation on the round ligament unless there be complications within the abdomen. The external method gives quite as good results as the internal and the patient will usually be more comfortable subsequently.

It is certainly true that an internal operation on the round ligament of any type is sometimes followed by chronic distress and pain, which is exceedingly rare following the external operation. The external operation is an excellent means of maintaining a movable uterus in position, yet it is an operation with but a small field of usefulness because uncomplicated retroversion seldom requires treatment.

We have complete records of the physical examination of many thousands of women. While the normal position of the uterus in the majority of women, perhaps 75 per cent., is more nearly anterior than posterior, it must be acknowledged that in at least 25 per cent. and at various ages retroposition exists. The condition will be found as often in the young girl as during the child-bearing period and after the menopause, and it is probable that retroposition of the uterus is even more common than these data would suggest. It is altogether probable that a uterus in retroposition is often lifted into the anterior position by the bimanual examination itself, before its position is definitely determined.

In performing operations in the upper abdomen, it has been our practice for some years to make a complete examination of the abdomen with the gloved hand and we have found retroposition of the uterus to exist in at least 50 per cent. of the women examined. The evidence thus obtained, however, is robbed of some of its value, since these patients were under an anesthetic, which might influence relaxation of the uterine supports.

At one period the Alexander operation was practiced indiscriminately by many surgeons. Fixing a movable retroversion for the cure of neurasthenic symptoms was an easy matter, but it did not cure the patient. We often forget that the brain and nervous system are as large and as heavy as the liver, and that the production of thought, sensations, etc., is the function of the central nervous system as much as the production of bile is one of the functions of the liver. Disturbance of the function of the brain and nervous system results in disturbed thoughts or sensations, which extend to all parts of the body. I have no sympathy with the view so often advanced that neurasthenia, neuroses, etc., always depend on physical causes independent of the brain and nervous system, just as though the nervous system had no right to have functional disturbances.

When it is considered that a large percentage of women have retroposition of the uterus, and that about 22 per cent. have a markedly movable kidney, it can be seen how little chance the neurasthenic has to escape an operation if the mere presence of such conditions is taken as evidence. As much also may be said of prolapse of the stomach and colon.

The external operation was also applied in a large number of cases of adherent retroversions and in those in which the symptoms were the result of inflammation of the ovaries and tubes, rather than the result of the position of the uterus. All of these causes have led to the abandonment of an operation which gives definite and valuable results when properly performed on patients needing it.

On a number of occasions I have heard surgeons say that the permanence of an operation on the round ligaments depended on whether or not there were to be future pregnancies. It should not be forgotten that the round ligaments are non-striated muscle fibers and part of the wall of the uterus itself, which has been projected forward to the spine of the pubes. The round ligaments undergo hypertrophy during pregnancy and involution following pregnancy. We have not found that repeated pregnancies have influenced the ultimate results in these cases. It has been a noticeable fact that in cases of prolapse during the child-bearing period the round ligaments are unusually well developed.

We have performed the external operation on the round ligaments about as it was done by its originator; that is, an oblique incision 2½ inches in length is first made, ending over the spine of the pubes. The superficial layer of the superficial fascia is divided and the hemorrhage carefully checked to prevent staining the field. Opening the deep layer of the fascia exposes the pillars of the ring and the intercolumnar fascia. The intercolumnar fascia is separated with a pair of forceps and a two-pronged blunt retractor is introduced into the lower angle of the wound. Traction is then made downward in such manner as to draw on the attachments of the round ligament to the spine of the pubis; this will ordinarily draw about ¾ inch of the cord, which will be recognized readily by its pinkish color, out of the canal. It must be remembered that the only part of the ligament which, when shortened, will affect the uterus is that which lies within the peritoneal investment. I have known the cord to be shortened without affecting the position of the uterus because the portion shortened lay only within the canal itself and did not draw on the uterus at all.

The perineal restoration which completes the combined operation for prolapse in the child-bearing period should be based on principles which will be referred to later.

II. TREATMENT OF PROLAPSE DURING MIDDLE AGE

The operation which we have used with great satisfaction in this group of cases, in which marked cystocele occurs and in which the uterus is not atrophic, is the Watkins[4]-Wertheim[5] operation. While we have per-

3. Alexander: Surg., Gynec. and Obst., vii, 408; Text-Book of Gynecology (Wood), Ed. 2, p. 594.

4. Watkins: Surg., Gynec. and Obst., May, 1909.
5. Wertheim: Surg., Gynec. and Obst., January, 1907.

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formed the operation for years, I think we have done it more satisfactorily since using the technic of Frankenthal.[6] The principles of the Watkins-Wertheim operation are correct inasmuch as the bladder is first separated from the vagina and then from the anterior wall of the uterus, thus restoring the bladder to the abdominal cavity and drawing the fundus of the uterus forward into a complete anteversion with suture to the anterior vaginal wall so that the bladder will lie within the abdominal cavity on the posterior wall of the uterus. When the bladder fills with urine it exerts upward traction instead of downward pressure. Since in many of these cases the prolapse began in the child-bearing period, and supravaginal elongation of the cervix is present, amputation of the cervix may be necessary, as it may be too long to lie in the hollow of the sacrum without flexion. If the Watkins-Wertheim operation be done during the child-bearing period, which is not often necessary, the fallopian tubes must be separated from the uterus. If the uterus be not sufficiently large, that is, approximately near the normal size, this operation will fail.

We have had two cases of our own and have reoperated in three others in which an atrophic uterus subsequently not only failed to hold the bladder up but was forced entirely out of the body. These cases were cured by the vaginopelvic fixation method as described hereafter. In some cases in which the cystocele was not so prominent a feature, we followed the plan of making a partial instead of a complete separation of the bladder from the uterus and attaching the anterior wall of the vagina to the uterus beneath the bladder much as was done in the Mackenrodt[7] method of vaginal fixation for cure of the retroversion.

III. TREATMENT OF PROLAPSE IN ELDERLY WOMEN

The most generally useful operation for prolapse of the uterus in all types of cases beyond the child-bearing period is one which we have practiced for about eighteen years and for want of a better name have called the "vaginopelvic fixation operation." It is especially applicable to those patients with a small uterus in whom the Watkins-Wertheim method cannot be applied and in all cases in which there is disease of the uterus which requires hysterectomy, or coincident disease of the ovaries and tubes. It is applicable, however, in all cases in which the Watkins-Wertheim operation can be used, and as a rule we prefer it in those cases requiring amputation of the cervix in connection with the Watkins-Wertheim operation. In our experience the patients have been more comfortable after this method.

The principles on which this operation depends are very simple. The vaginal wall with its attachments to the cervix lies outside of the body. By removal of the uterus and usually of the ovaries and tubes, the round and broad ligaments can be secured high in the pelvic cavity and that part of the vaginal wall which was attached to the cervix outside the body is fixed to the round and broad ligament stumps inside the pelvis.

Failures have been extremely rare following vaginal fixation. The few failures which occurred were due to lack of care in making the fixation of the wall of the vagina to the stumps of the round and broad ligaments. The vaginal wall should be made to surround the stumps in such a manner as to furnish broad areas for union. Hysterectomy without such firm attachments only makes conditions worse, since the entire vagina prolapses subsequently, a condition which is exceedingly difficult to rectify. For the relief of complete prolapse of the vaginal walls following hysterectomy, we have practiced two methods. In the very old patient, when there was no object in saving the vagina, we removed it, allowing the bladder and rectum to come in contact. Vaginectomy is easy of accomplishment and a number of these elderly patients were promptly relieved of great distress by this means. When it is an object to save the vagina, as it is in most instances, vaginal fixation from above is practiced and the vagina is attached to the round and broad ligaments through an abdominal incision. Or, if the original hysterectomy was supravaginal, we implanted the stump of the cervix in the muscles of the abdominal wall.

Kocher[8] has developed an operation which marsupializes the entire body of the uterus. The abdomen is opened in the median line, the uterus is drawn up, and the peritoneum drawn about the cervix, the abdominal walls and aponeurosis being made to grasp the uterus just above the cervix. The fundus of the uterus is then implanted so that it can be felt as a rounded tumor just beneath the skin. If the patient be in the child-bearing period, the tubes are disconnected from the uterus. Kocher has practiced this operation for a number of years with great satisfaction. Two excellent modifications of this method have been produced by Crile[9] and Eastman.[10]

We have used the Kocher method on a number of occasions in two groups of cases: The first includes those in which prolapse existed and it was necessary to perform an abdominal operation for another purpose; the second group comprises the occasional cases in which a prolapse has existed for years, with thinning of the vaginal walls, making them parchment-like. This condition occurs only in the senile patient and is usually associated with atrophy of the round and broad ligaments as well as of the uterus and vagina. The contra-indication to the Kocher method is a short vagina.

Few organs in the body have been so much written about as the female perineum, which shows that a certain amount of dissatisfaction has existed with methods in use for its repair. In the early nineties I found a little book written by one of Tait's assistants, on "Tait's Flap-Splitting Perineal Operation." It was curious to observe how this master surgeon anticipated the modern operation for perineal repair. The Tait operation,[11] which has been generally condemned, was long called the "skin-perineum operation," because its principles were not understood. Much of this misunderstanding grew out of personal antagonism to its brilliant but eccentric originator. Tait was the father of modern abdominal surgery. Tait in England, Péan in France and Price in America led the contest which placed surgery of the abdomen on a sound basis.

Tait's perineal operation had two important principles. First, it uncovered the muscles and structures, which had been separated, so that they might be accurately sutured together. Previous to Tait's time the essential features of perineal operations were "bat wings," "butterfly" and other methods of removing mucous membrane. The form of the denudation is essential as it necessitates grasping and bringing together the deeper structures of the perineum to close the denudations. Tait lifted the mucosa from the body of the perineum by

6. Frankenthal: THE JOURNAL A. M. A., July 3, 1909, p. 16.
7. Mackenrodt: Monatschr. f. Geburtsh. und Gynäk., 1896, iv, 489.
8. Kocher: Text-Book of Operative Surgery, 1911, p. 706.
9. Crile: Cleveland Med. Jour., July, 1905.
10. Eastman: Surg., Gynec. and Obst., 1911, p. 160.
11. Tait: Medical and Surgical Gynecology, Pozzi, ii, 363.

careful separation at the mucocutaneous line, keeping inside the opening of Bartholin's glands. Many thick and painful perineums have been caused by dividing Bartholin's duct and by changes engendered thereby in the gland itself. Tait opened the perineum as one would open the abdomen in order to gain access to the parts to be repaired.

The second principle is one which I believe has not been generally recognized. The mucosa is lifted well off at each angle, but the dissection is not made deep in the midline. The apex or crest of the rectocele is then pushed upward and held inside the vagina; this traction draws on the torn fibers of the external and internal sphincters of the rectum. In closing, the lateral muscular structures were brought together and united with the torn sphincter fibers, restoring proper direction to the anal canal. This upward and inward traction of the crest of the rectocele also elongates the posterior vaginal wall. Tait carefully avoided the mucous membrane and skin in suturing and thereby avoided infection and pain.

Those interested in the type of perineal operation which deals with the muscular and fascial structures will find two articles of great value, one by Harris[12] on the transverse perineal muscles, and one by Hill[13] dealing with those muscles which are derived from the levator ani. The modern perineal operation exposes and sutures the perineal muscles and fascias with as much anatomic accuracy as would be developed in an operation for inguinal hernia.

Curiously enough, the worst type of rectocele may not be associated with prolapse, but exists as a true rectal hernia through the perineal body in which a circular opening with well-defined margins will be found just above the external sphincter. The sac lined with mucosa may be the size of an egg or an orange as it projects from the vagina. This condition is best corrected by separating the rectal structures from the posterior vaginal wall through the perineum in the usual manner. The sac is then drawn out through the anal orifice, after the sphincter has been thoroughly stretched. Following its extrusion it is caught in a clamp and cut away.

With a running suture of catgut the mucosa is closed and the suture line left protruding from the anus until it retracts. The method of suturing the mucosa is similar to the Pilcher[14] hemorrhoidal operation. After disposing of the rectal mucosa, the ordinary perineum is made as already explained. This method was first described by Noble,[15] and by its use we have effected permanent repairs in a number of cases in which there had been relapse after repeated operations by other methods.

12. Harris: THE JOURNAL A. M. A., Dec. 9, 1899, p. 1450.
13. Hill: THE JOURNAL A. M. A., April 4, 1908, p. 1101.
14. Pilcher: Ann. Surg., 1906, xliv, 275.
15. Noble: South. Med. Jour., April, 1909.

Manson and the Parasitic Theory.—We speak nowadays glibly of "hosts" and "alternative hosts;" we no sooner find a parasite than we seek for the animal in which it abides during a period of its existence and undergoes developmental changes therein. When Manson conceived the idea that the mosquito conveyed the infection, and further, when he proved that in the mosquito the filaria embryos underwent processes of development necessary for the continuance of their species, it is safe to say no such conception had ever entered the brain of man, and certainly never had been proved by anyone. The part played by the mosquito in filaria was a discovery that revolutionized science; it served to start mankind on a new tract of thought and a fresh field of investigation.—*Journal Tropical Medicine and Hygiene.*

THE HYGIENE OF SWIMMING-POOLS *

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The care of swimming-pools in educational institutions and athletic clubs has of late years attracted considerable attention. Notable studies have been made, among which may be especially mentioned those at Brown University, and by Dr. William J. Lyster at the University of Pennsylvania. Gymnasia which are frequented by a large number of persons may act as foci of infection. It seems possible that a swimming-pool with a limited supply of water, when used by a large number of persons, may serve to convey from one to the other pathogenic organisms. In this connection the danger from typhoid fever seems to attract the attention of many people. There is no doubt that contaminated water may produce this disease in swimmers as the water is not infrequently taken into the mouth.

The men's gymnasium at the University of Wisconsin is much overcrowded and it was felt that a study of conditions as found in both the men's and the women's pools would be of unusual benefit. This was undertaken by the hygienic laboratory, and the work was done mainly by Mr. E. J. Tully, the chemist of the laboratory. Both chemical and bacteriologic analyses were made. A study has been made of the increasing contamination of the pools between the changes of water, and also the value of hypochlorite of lime in controlling the bacterial conditions. The methods followed in the analyses were those laid down by the Committee on Standard Methods for Water Analysis of the American Public Health Association.

The swimming-pool in the men's gymnasium is 80 feet long, 20 feet wide, and ranges from 4 feet to 10 feet in depth with a capacity of 97,000 gallons, approximately. The tank is emptied, cleaned, and filled with water from Lake Mendota once each week. The lake water is warmed during the winter and maintained at a temperature of 70 F. Approximately 275 men use the tank each day until Saturday, when the number is much increased. The bathers are required to take a shower-bath before entering the pool.

The swimming-pool in the women's gymnasium is 60 feet long, 20 feet wide and ranges from 3½ feet to 7 feet in depth, its capacity being approximately 70,000 gallons. Water from Lake Mendota is used in this tank also, but is filtered through coke and scrap-iron before entering the pool. The pool is emptied each Friday and the tank allowed to air until Monday, when it is refilled, and bathing begins Monday afternoon. The water is kept at a temperature of from 75 to 80 F. Only about fifty persons use the tank per day, and every person is required to take a shower-bath before entering the pool. Lake Mendota is rich in lower plant life and during the summer the water often acquires a disagreeable smell on account of these vegetable growths. Formerly much sewage from the city of Madison and lake shore settlements emptied into the lake and several outbreaks of typhoid fever have occurred which were attributed to the use of lake water. Of late years septic tanks and filter-beds have been used and this condition has been much

* This article is abbreviated in THE JOURNAL by omission of the tabulated details. The complete article appears in the Transactions of the Section and in the author's reprints.

* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

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improved. A large number of examinations were made, only some of which are presented here, but these are typical of all. Bacteriologic and chemical analyses were made of the boys' tank in January, March and April, 1910, and in January and February, 1911; samples were collected in the girls' swimming-pool during the same months of 1911. In 1911 and 1912 experiments with hypochlorite of lime were carried out, as is shown by the table. Control samples were taken from the inflow pipe at the same time that the samples from the tank were taken.

The first series of examinations was made in January, 1910. Two samples were collected daily, morning and afternoon. The plating and inoculations of the fermentation tubes were done within fifteen to thirty minutes after the taking of the samples.

Table 1 gives the results of the first series of examinations from Jan. 18 to Jan. 29, 1910.

The results show that the number of bacteria gradually increases, the maximum being reached about the middle of the week, followed by a decrease until Saturday, when a considerable increase is again apparent. This is probably due to the large number of bathers using the tank on Saturday. The colon bacillus is usually present in 10 c.c., and sometimes in 1 c.c. of lake water. During the two weeks of this examination the colon bacillus was generally present in 10 c.c. and only occasionally in 1 c.c. of the tank water. The increase in the chlorin content was slight. In all the examinations the chlorin content showed very slight increase.

Table 2 gives the bacteriologic and chemical results for the week of Jan. 16, 1911. The fluctuation in the number of bacteria is closely similar to that shown in Table 1, and the amount of chlorin corresponds closely. The chemical analyses show a small but gradual increase in free ammonia, albuminoid ammonia, nitrites and total nitrogen. The amount of nitrogen as nitrates remains constant, while the chlorin increases slightly. In general, the chemical results show the presence of considerable nitrogenous organic material in the lake water, and the initial increase in the number of bacteria present is due, no doubt, to the natural growth of bacteria in a favorable environment, and is probably not caused to any considerable extent by the addition of polluted material. As the amount of chlorin present is about the same, there is here also little evidence of additional pollution. The examinations showed that the hygienic condition of the boys' swimming-pool was generally very good.

Tables 3 and 4 give the results of the examinations of the water in the girl's swimming-pool. This pool is used by fewer students and the water is filtered before entering the tank. It will be seen that the results show a very satisfactory condition of the water and indicate that the method of filtration yields a satisfactory degree of purification.

Table 5 shows the bacteriologic and chemical results after 1 liter of urine had been added to the water in the pool in order to determine whether or not any material increase in the nitrogen and chlorin content would be manifest in the daily analyses. The urine was added Monday afternoon, February 6, after a sample had been taken at the pipe. The maximum count on gelatin was relatively quite high and the counts remained high during the week. The agar counts were somewhat low, but *B. coli* was constantly present in 10 c.c., 1 c.c. and occasionally in 0.1 c.c. Its continued appearance in 1 c.c. was significant in this series, because it was absent from 1 c.c. of the pool water in most of the experiments. There is no essential difference between the results of the chemical analyses of this series and those shown in Table 2. In general, the chemical results showed that nitrogen determinations were more delicate than chlorin determinations as an index of the sanitary condition of the pools.

Experiments were carried out in the laboratory on the action of hypochlorite of lime in purifying the water in the swimming-tank. The first step necessary was the determination of that amount of available chlorin per million which would produce practically sterile water. Samples of water from the boys' swimming-pool containing 250 c.c. each were treated with hypochlorite of lime in the proportion of 0.5 part and 1 part of available chlorin per million for thirty minutes. The bacterial content of the samples was materially reduced and the colon bacillus generally destroyed with the use of 0.5 part of available chlorin. When 1 part of available chlorin per million was used the water became practically sterile and all traces of the colon bacillus disappeared. The results are shown in Table 6.

The next experiment consisted in putting the hypochlorite of lime into the swimming-tank and making a series of examinations. The results are given in Tables 7, 8, 9 and 10. These tables show that to obtain satisfactory results, the hypochlorite of lime must be added in sufficient quantities to give 1 part of available chlorin per million. They show further that when the tank is being used the effect lasts only about three days, after which there is considerable increase in the number of bacteria present. To obtain entirely satisfactory results under the conditions as they exist at Wisconsin, hypochlorite of lime in the proportion mentioned must be added to the swimming-pool twice each week.

Table 10 shows the results when the hypochlorite of lime is added daily in small amounts, reaching finally a maximum of 1 part of available chlorin per million. They are seen to be unsatisfactory.

CONCLUSION

It must be admitted that contagious diseases can be spread by means of artificial swimming-pools, and that if the water contains the germs of typhoid fever they can be taken into the system. With ordinary waters and with a pool of good capacity, the change once a week keeps the water in fairly good condition. The addition of hypochlorite of lime is a simple, cheap and safe procedure which insures absolute safety.

THE RELATION OF INTERSTATE WATERS TO THE SPREAD OF TYPHOID*

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Interstate waters are the source of water-supply for many millions of people. The number actually dependent on interstate or international sources is constantly growing. Sanitary conditions in the drainage area of the Great Lakes and the drainage basins of the Missouri, the Mississippi, the Ohio and other great rivers are becoming more important because of the increasing demands on these waters as sources of public supply. With the increase of population especially in sewered cities there is a coincident increase in direct sewage

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pollution of these waters. It has been the common practice in American cities to use these interstate waters for sewage disposal. This method of sewage disposal by dilution has an enormous advantage because of low cost over other methods involving more or less purification. In so far as nuisance is concerned, there was usually stream flow or volume of water sufficient to ensure proper dilution. No criticism can be made of cities which employ this method for economic reasons provided they furnish proper safeguards to their own public water-supply and that they do not pollute or endanger the supply of other cities. Unfortunately until recently nearly all cities situated on these great waterways furnished water without filtration or treatement and at the same time discharged their unpurified sewage into the same interstate water. In the case of lake cities the water-works intakes often received contamination from their own sewage, while the cities on the great rivers furnished pollution for the intakes of other cities situated down-stream.

Under these conditions it is not strange that very high typhoid fever rates prevailed in these cities and that from time to time massive explosive outbreaks occurred.

TABLE 1.—ANNUAL DEATH-RATES FROM TYPHOID FEVER PER HUNDRED THOUSAND POPULATION IN SOME LARGE AMERICAN CITIES ON THE GREAT LAKES AND THE MISSOURI, MISSISSIPPI AND OHIO RIVERS

City	1906	1907	1908	1909	1910
Chicago	18.3	17.7	15.3	12.6	13.7
Indianapolis	39.2	29.4	26.4	22.3	28.5
Louisville, Ky.	67.7	67.9	44.2	45.0	31.7
New Orleans	29.6	55.5	33.1	28.4	31.5
Detroit	22.3	28.3	22.3	20.5	23.0
Grand Rapids, Mich.	39.1	32.4	31.8	17.2	28.3
St. Paul	21.1	17.1	12.0	18.9	19.5
Minneapolis	32.9	25.9	17.8	21.0	58.7
Kansas City, Mo.	37.8	39.9	35.0	29.3	54.4
St. Louis	11.9	14.1	13.0	16.2	14.9
Omaha	28.2	23.5	22.1	36.8	86.7
Buffalo	23.6	29.2	20.7	23.8	20.4
Cincinnati	71.5	46.4	18.6	13.3	8.8
Cleveland	20.2	18.9	12.6	13.3	17.9
Columbus, Ohio	37.1	38.3	110.5	19.6	18.1
Toledo, Ohio	45.0	36.4	40.1	41.7	37.2
Pittsburgh	141.3	130.8	46.6	24.6	27.8
Memphis, Tenn.	42.4	38.8	37.0	48.8	27.4
Nashville, Tenn.	74.4	82.6	59.5	52.0	48.9
Milwaukee, Wis.	30.5	25.7	17.4	21.4	45.7

A glance at the accompanying tables will show the excessive prevalence of typhoid fever in these cities compared with cities in northern Europe.

TABLE 2.—ANNUAL DEATH-RATES FROM TYPHOID FEVER PER HUNDRED THOUSAND POPULATION IN TEN EUROPEAN CITIES

	Average for 5 Years, 1901-1905	1906	1907	1908	1909	1910
Stockholm	3	2	2	1	0.5	1.8
Christiania	3	4	2	2	1.7	1.6
Munich	4	2	3	3	1.9	1.4
Edinburgh	8	3	3	2	1.2	1.3
Vienna	4	5	3	4	2.8	3.8
Hamburg	4	4	3	4	3.3	4.1
Berlin	4	4	4	4	4.2	2.9
Dresden	4	7	2	6	4.2	2.2
Copenhagen	8	4	2	7	2.7	3.6
London	8	6	4	5	2.2	3.3

For many years there seemed to be a general understanding that sewage must be kept away from the public water-supply. It might be discharged into the same body of water provided the point of discharge was "down-stream" from the intake. In river cities this principle disregarded the rights of the communities situated down-stream, and their intakes were thus exposed to pollution. In cities on the Great Lakes the curious fallacy was prevalent that there was a normal lake current setting consistently in one direction and that if the intake were placed "down-stream" in relation to this current it would be safe from sewage pollution. Thus in Lake Erie the current was supposed to be from west to east, and the intakes were invariably placed to the westward of the sewage outlets.

TABLE 3.—ANNUAL DEATH-RATES FROM TYPHOID FEVER PER HUNDRED THOUSAND POPULATION IN FIFTEEN OTHER EUROPEAN CITIES

City	1909	1910
Frankfort	1.5	0.9
Antwerp	1.0	2.3
Bristol	2.8	2.1
Nuremberg	2.0	...
Birmingham	5.0	3.9
Belfast	5.2	3.9
Lyon	5.8	4.4
Leeds	7.2	3.8
Liverpool	8.4	5.9
Sheffield	9.4	3.0
Rotterdam	6.4	6.5
Amsterdam	3.8	6.7
Paris	8.4	5.6
Bradford	4.3	9.2
Leipsic	8.3	7.5
Total average rate...	5.3	4.5

TABLE 4.—TYPHOID FEVER RATES IN LARGE EUROPEAN AND AMERICAN CITIES

Unit of Comparison	Aggregate Population	Deaths per 100,000 from Typhoid Fever, 1910
Thirty-three principal European cities in Russia, Sweden, Norway, Austria-Hungary, Germany, Denmark, France, Belgium, Holland, England, Scotland and Ireland	31,500,000	6.5
Fifty American cities of 100,000 inhabitants or over	20,250,000	25.0
Excess of deaths from typhoid fever in American cities	.....	18.5

Another instance of the insecure measure of protection which formerly seemed to satisfy public demand in preventing pollution of intakes is furnished by the Niagara River cities. Buffalo, the Tonawandas, Lockport and Niagara Falls all have intakes which were supposed to be safe because the sewage-polluted current hugged the shore in a ribbon ordinarily about 300 feet wide, and the intakes were placed from 700 to 1,500 feet from shore to avoid this polluted shore water.

We know now from bitter experience that currents on the Great Lakes are notoriously unstable and cannot be expected to protect water-works intakes for more than a portion of the year. We know also that the width of polluted shore water is variable and inconstant, and cannot be depended on except in quiet weather.

Some of our big progressive cities spent large sums of money to escape the sewage pollution by extending the intakes further out into the lake and by diverting sewage from the source of water-supply. These measures afforded but temporary relief and merely postponed the inevitable treatment or filtration of the public water-supply. The obvious remedy — water purification — which gives prompt protection, seems to have been reached last and in nearly every instance was applied only after other expedients had failed.

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STORAGE AS A PURIFYING AGENT

The storage capacity of the Great Lakes is enormous. Let us take Lake Michigan as an example. Lake Michigan is 307 miles long and has a maximum width of about 118 miles. The maximum depth is 870 feet. With this storage capacity its power to oxidize and purify organic matter can scarcely be overestimated. The effect of storage of Lake Michigan water is accentuated by the comparatively small outflow (an average of only 57,000 cubic feet per second through the straits of Mackinac). For example, compared with Lake Huron, the area of water surface is nearly the same (over 22,000 square miles) and the maximum depth of Lake Michigan is about 100 feet greater than that of Lake Huron. The outflow of Lake Huron at Port Huron is about 210,000 cubic feet per second while the outflow from Lake Michigan is only about one-fourth as much. This means longer retention of polluted inflow from rivers and sewers and more opportunity for purification before discharge through the straits at Mackinac. It would take Lake Michigan many years to empty itself at its present rate of outflow if all inflow were prevented. Under these circumstances the quality of Lake Michigan water must be good provided we can get it far enough from the polluting inflow of rivers and sewers. Unfortunately the zone of polluted water extends a considerable distance out into the lake from the water-fronts of the cities and the mouths of the large rivers; further, this zone of pollution has no constant boundaries because of currents due to wind and flood, but threatens under unusual weather conditions far beyond the point which seems safe in quiet weather.

These facts make it extremely difficult if not impossible both from the engineering and the economic points of view to obtain pure water near our large lake cities every day in the year by simply extending a pipe out into the lake without filtration or treatment of the water.

When cities have a public water-supply polluted by sewage, or admittedly exposed to pollution, the obvious thing to do is to filter or treat the water and protect the public from infection. Unfortunately there is a deplorable tendency to abuse the town upstream and to spend years in an effort to compel (usually without legal process) sewage treatment in the offending municipality. In other cities where the pollution is due to their own sewage, years are lost in the discussion of methods of sewage purification, while the dangerous untreated and unfiltered water is furnished to the citizens.

In regard to sewage disposal, it must be remembered that no general rule can be formulated which will cover with justice every case. Each municipality becomes a separate problem and local conditions must be studied. Remedies for correction of improper sewage disposal will differ according to the local conditions. Even if all the sewage from our large cities and towns was prevented from reaching the lakes and rivers, it would be impossible to prevent pollution from reaching these waterways in times of storm and flood, so that sewage disposal even carried to the degree of sterilizing the effluent does not give us a substitute for water filtration or treatment. While it is impracticable to prevent pollution of the Great Lakes and other interstate waters, it is possible and imperatively necessary that such pollution be controlled and kept within safe bounds. It would be very foolish from an economic standpoint not to avail ourselves of the cheapest and simplest method of sewage disposal, namely, disposal by dilution, provided that this may be done without danger to the water-supplies of other communities and without putting an unreasonable burden and excessive responsibility on the filter-plants of those communities. The point to which this method of disposal may be permitted must be determined by local conditions.

Disaster occurs from using sewage-polluted water-supplies for one of three reasons: (1) failure to purify; (2) inefficient purification; (3) failure to supply the purified water to all.

The failure to instal a purification plant is usually due to an undue confidence in a water-supply which is safe "most of the time." It is difficult for some to understand, without a severe lesson, that it is not sufficient to have a water-supply that is safe for 360 or 361 days in the year, and to these officials it seems scarcely justifiable to require expensive purification for the sake of the four or five days in the year during which, due to weather conditions, pollution may take place. Such a supply, with a favorably placed intake, may escape pollution for more than a year. There was no evidence of serious pollution of the water-supply of the city of Erie during the year 1909, yet the appalling disaster of January and February, 1911, showed that pollution could take place under certain weather conditions.

One large city using unfiltered lake water is so sure that the water is pure that examination is made only occasionally. One of the largest lake cities using an unfiltered supply exposed to sewage pollution makes a bacterial count daily, but restricts its effort to detect sewage pollution to the antiquated and indefinite test of inoculating a guinea-pig occasionally with a small portion of a broth culture.

Poor filter efficiency is often responsible for disaster in the shape of typhoid outbreaks and may be due to several causes. The slow sand type may give poor filter efficiency when sufficient extra units are lacking, necessitating excessive rates and placing of "green" filters in service. Excessive rates, too little coagulant, insufficient capacity of sedimentation tanks and insufficient storage are common operating and structural faults of the mechanical type. Sometimes a properly constructed plant is struggling with a raw water which has a high bacterial content and even with fair filter efficiency yields an unsafe effluent. Probably the greatest single cause of a poor effluent from filter-plants is inefficient operation by unskilled men. It is absolutely essential for good results that bacteriologic examination, including *Bacillus coli* estimation, be made at least once daily, and in slow sand plants from each unit separately.

The man in charge must be able to do this. In mechanical filter-plants or with hypochlorite plants he must also have the necessary skill to adjust his chemicals with nicety according to the changes in the raw water. With such a man in charge of a properly constructed plant a safe effluent is assured at all times. When struggling with a bad raw water, he will use hypochlorite as an adjuvant with good results. He will study the peculiarities and fluctuations of the constituents of the raw water and adjust his treatment accordingly.

The most serious defect in sanitary control of our water-supplies is the lack of proper daily bacteriologic examination of the water and quantitative estimation of the *B. coli* content. In some of the lake cities there is proper daily bacteriologic examination of the water-supply, but in many of them there is either an imperfect examination or none at all. One city with a slow sand filter-plant of three units and a consumption equal to the safe filter capacity of the beds operates these without rest, putting the units in service "green" and with an

occasional examination of the water once or twice a month. As a result this city in 1910 had a typhoid fever death-rate of over 300 per hundred thousand.

As an instance of high rate due to failure to furnish filtered water to all the people, the experience of Pittsburgh is interesting. The filter-plant in Pittsburgh was first put in operation November, 1907. But a small portion of filtered water was supplied at first and this was mixed with the unfiltered supply. The amount of water filtered was increased until October, 1908, when the supply of that part of the city between the rivers — about three-fifths of the total population — was filtered.

The south side, a little less than one-fifth of the entire population, was supplied with filtered water in March, 1909. The former city of Allegheny, recently annexed, is not yet supplied with filtered water. This part of the city includes a population of about one-fourth of the entire city.

There was a remarkable decrease of typhoid fever in Pittsburgh progressively coincident with the increase of area supplied with filtered water. In spite of all this remarkable reduction two points stand out prominently: First, the rate is still high (1910), and second, the seasonal distribution suggests water as a prime factor. Explanation of these two points is furnished by a study of the cases as shown in Table 5, from which it is clear that water was responsible for the high rate, and that this high rate was due entirely to the abnormal rate in Wards 21 to 27 inclusive.

TABLE 5.—TYPHOID FEVER DEATHS BY WARDS, PITTSBURGH, 1910 *

Ward	Population	Typhoid Deaths	Ward	Population	Typhoid Deaths
1	11,623	3	15	20,141	3
2	14,386	1	16	20,833	1
3	26,462	3	17	25,213	3
4	25,055	11	18	17,994	1
5	24,495	2	19	23,482	3
6	26,261	3	20	18,648	2
7	13,263	1	21	22,506	11
8	18,204	6	22	15,716	9
9	17,795	6	23	21,799	13
10	21,205	3	24	17,354	6
11	17,066	2	25	16,037	5
12	22,342	2	26	15,291	6
13	24,080	2	27	15,291	6
14	13,074	1			

* These figures were furnished by the health department of the city of Pittsburgh.

Total population of Pittsburgh	533,905
Total deaths, typhoid fever	115
Death-rate per 100,000, entire city	21.3
Death-rate per 100,000, Wards 1 to 20	13.4
Death-rate per 100,000, Wards 21 to 27	46.9

Wards 1 to 20 were supplied with filtered water. The aggregate population of these twenty wards was 401,622. The typhoid death-rate per one hundred thousand in 1910 was 13.4. Wards 21 to 27 comprise the old city of Allegheny and have a total population of 132,283. This section received unfiltered water. The typhoid death-rate per one hundred thousand in this section in 1910 was 46.9.

THE SIGNIFICANCE OF TYPHOID FEVER FROM AN INTERSTATE STANDPOINT

The spread of typhoid fever from one state to another is a national problem and to prevent this spread it is necessary to reduce the prevalence of typhoid fever in cities and states, so that at once it is a national problem and a local or state problem as well. The careless pollution by sewage in one state by A, of a stream used as a water-supply without filtration in another state by B, is an illustration of interstate spread of typhoid fever which is common enough. In such an instance A, the town polluting the stream, insists that B, the town below, protect itself by filtering its water-supply; B insists that A, the town above, should render its sewage innocuous before discharge into the stream. As a matter of fact both may be right and both of these two great agencies for preventing water-borne typhoid may be necessary. It is difficult for these warring communities to adjust their differences and decide just to what point sewage purification must be carried at A, in order that too great a strain and too great a responsibility may not be placed on the filter-plant at B. The significance of polluted water-supplies in large industrial centers from an interstate point of view is enormous. Trains and steamboats take their water-supplies at such points and this polluted water is drunk by the passengers throughout the trip.

Excessive prevalence of typhoid fever in any city which by reason of its commercial or industrial importance attracts large numbers of visitors has an important bearing on the spread of typhoid from one state to another. The same is true of other cities which because of great natural advantages, the beauty of their surroundings or other reasons attract thousands of tourists and visitors from other states. For these reasons, the prevalence of typhoid and the character of the water-supply in cities like Pittsburgh and Detroit, Niagara Falls or Mackinac Island becomes a matter of serious moment from an interstate point of view. The excessive prevalence of typhoid fever for years in Niagara Falls and Pittsburgh was not only a matter of local or even state concern, but a grave national danger as well.

Great reduction in the typhoid fever rate has been effected recently by the installation of filter-plants in Pittsburgh, Philadelphia, Cincinnati, Columbus, Ohio, and Escanaba, Mich.[1] Hypochlorite treatment of the water has produced remarkable results in lowering the typhoid fever rate in Erie, Pa., Omaha and Minneapolis. In spite of these encouraging results in certain cities, much remains to be done in cities which are still using unpurified surface water for public supplies.

The problem of sewage pollution of interstate waters with special reference to the spread of typhoid fever has been studied intensively by me for the past eighteen months. During that time my investigations have covered the entire drainage area of the Great Lakes within the United States from Duluth, Minn., to Ogdensburg, N. Y.[2] As a result of this study certain fundamental facts seem to stand out prominently in the discussion of this problem:

1. The primary necessity from a sanitary point of view is safe water-supplies 365 days in the year without waiting for solution of sewage-disposal problems.

2. In spite of the most elaborate methods of sewage purification, pollution of these waterways will take place at certain times, so that sewage purification cannot be considered a substitute for the inevitable purification of water.

3. Because of winds and currents, floods and thaws, the boundaries of the zone of shore pollution are constantly changing. The only way to secure safe water every day in the year, without unjustifiable expense, is by some method of water purification.

4. Sewage purification may often be an aid and sometimes a necessity to improve the quality of the raw

1. Hyg. Lab. Bull. 83.
2. McLaughlin, Allan J.: Sewage Pollution of Interstate and International Waters, with Special Reference to the Spread of Typhoid Fever, Hyg. Lab. Bulls. 77 and 83.

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water, but will rarely, if ever, make one of these surface supplies absolutely safe. For this reason it must be considered as secondary to water purification in preventing water-borne diseases.

5. The use of streams for sewage disposal within permissible bounds is an economic advantage, and absolute prohibition of this use is unjustifiable.

6. This use of streams is sound in principle and safe in practice when proper restrictive control is exercised.

7. The permissible limit of pollution of each river, lake or waterway can be fixed only by careful study of the waterway, and of the uses which must be made of it and to which it is best adapted.

8. Although prevention of all pollution is impossible, control of pollution is feasible and imperatively necessary. The absolute prohibition of discharge of sewage into these waters is scarcely justifiable and the legality of such legislation would be extremely doubtful.

9. The discharge of sewage should be under control and permitted when possible for economic reasons within certain limits. The permissible limit of such reasonable use should be fixed by official standards of the raw water after a careful sanitary survey and consideration of the purposes for which the waterway is necessary or available.

10. These official standards would have to be made for each problem separately and independently, it being manifestly impossible to attempt to fix any general standards of raw water to cover all cases. The acceptance of these basic facts will tend to prevent unjustifiable generalization in a problem in which each city is a law unto itself. By allowing a reasonable use of these interstate waters in the reception of sewage or sewage effluents subject to such restrictions coupled with water purification which will amply protect the public health, the more intensive processes of sewage purification may in many cases be avoided. A city may thus be saved a very great expense which could only be justified on sentimental and not on practical grounds.

To attempt the impossible is not only to court certain failure, but further, such attempts make difficult later efforts of a more conservative and practical nature.

ABSTRACT OF DISCUSSION

DR. H. M. BRACKEN, Minneapolis: Some people argue that the purification of sewage should be required to such an extent as to leave the streams into which it is discharged fit for drinking purposes. On the other hand, some engineers go to the other extreme at present, if I understand their position, maintaining that streams are natural sewers, and that they should be used as such, even to the point of creating a nuisance. I think it will have to be admitted that streams must be used for the carriage of sewage; but partial purification of the sewage before its discharge into streams should also be insisted on, so as to make the filtration of the water for domestic use less burdensome.

Nature's Cold-Storage Plant.—The markets of Irkutsk, Siberia, are an interesting sight, for the products offered for sale are in most cases frozen. Fish are piled up in stacks like so much cordwood, and meat likewise. All kinds of fowls are similarly frozen and piled up. Some animals brought into the market whole are propped up on their legs and have the appearance of being actually alive. But, stranger yet, even the liquids are frozen solid and sold in blocks. Milk is frozen into a block in this way, and with a string or a stick frozen into and projecting from it. This, it is said, is for the convenience of the purchaser, who is thus enabled to carry his milk by the string or stick handle.—*American Food Journal.*

A FURTHER RESPONSE TO SOME CRITICISMS OF THE COLLOID-CHEMICAL THEORY OF WATER ABSORPTION BY PROTOPLASM

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A. R. Moore has recently published two articles[1] on edema which are in essence a criticism of some views which I have expressed on this subject.[2] Were it not for the fact that one of these articles has enjoyed a publicity which my efforts have not been able to obtain, it would be needless to publish a response that is a mere repetition of what has been said before and which proves Moore's contentions neither original nor binding.

The facts brought out by Moore in his first paper may be summarized as follows:

When frogs' muscles are placed in Ringer's solution (a mixture of sodium, calcium and potassium chlorid) they do not gain in weight, or they may actually lose. When an "M/8" Ringer solution is used Moore found the muscle to maintain its weight, while when an "M/6" Ringer solution was employed the muscle lost. (It would be of interest to know what Moore means by these abbreviations which mean when written out, respectively, "one-eight molecular" and "one-sixth molecular" solutions. No chemist could understand these terms as applied to a mixture of three salts, and were he to take Moore at his word the solution prepared would be anything but the Ringer solution known to physiologists.) When varying amounts of lactic acid are added to these solutions Moore found that the muscles did not lose so greatly in weight or that they actually gained. These

1. Moore, A. R.: Can the Presence of Acid Account for the Edema of Living Muscle? Univ. of Cal. Pub. in Physiol., 1912, iv, 111; Fischer's Theory of Edema and Nephritis, THE JOURNAL A. M. A., Aug. 10, 1912, p. 423.

2. Fischer, Martin H.: The Physiology of Alimentation, New York, 1907, pp. 182, 267; The Swelling of Fibrin (with Gertrude Moore), Am. Jour. Physiol., 1907, xx, 330; Further Experiments on the Swelling of Fibrin, Arch. f. d. ges. Physiol. (Pflüger's), 1908, xxv, 99; Analogy Between the Absorption of Water by Fibrin and by Muscle, ibid., 1908, cxxiv, 69; The Nature and Cause of Edema, THE JOURNAL A. M. A., Sept. 5, 1908, p. 830; Swelling of Eyes and the Nature of Glaucoma, Preliminary Communication, Arch. f. d. ges. Physiol. (Pflüger's), 1908, cxxv, 396; Swelling of Eyes and the Nature of Glaucoma, ibid., 1909, cxxvii, 1; Corneal Opacities, ibid., 1909, cxxvii, 46; Remarks on a Colloid-Chemical Theory of Hemolysis, Kolloid Ztschr., 1909, v, 146; The Antagonistic Action of Neutral Salts on the Swelling of Fibrin in Acids and Alkalies (with Gertrude Moore), ibid., 1909, v, 197; The Passive Congestion Edemas of Kidney and Liver (with Gertrude Moore), ibid., 1909, v, 286; Edema as a Colloid-Chemical Problem with Remarks on the General Nature of Water Absorption in the Living Organism, Kolloid-chem. Beihefte, 1910, i, 93; Edema: a Study of the Physiology and the Pathology of Water Absorption by the Living Organism, New York, 1910 (also available in German and shortly in Russian); The Treatment of Glaucoma with Subconjunctival Injections of Sodium Citrate (with Hayward G. Thomas), Ann. Ophth., January, 1910; The Nature of Cloudy Swelling, Kolloid Ztschr., 1911, viii, 159; Further Remarks on a Colloid-Chemical Analysis of Nephritis, ibid., 1911, viii, 201; Contributions to a Colloid-Chemical Analysis of Absorption and Secretion (Absorption from the Peritoneal Cavity), Kolloid-chem. Beihefte, 1911, ii, 304 (available in English in Cincinnati Lancet-Clinic, 1912, cvii); Some Practical Points in the Treatment of Nephritis, Ohio State Med. Jour., August, 1911; The Nature, Cause and Relief of Glaucoma, Tr. Am. Acad. Ophth. and Oto-Laryngol., 1911, p. 193; Nephritis: an Experimental and Critical Study of Its Nature, Cause and the Principles of Its Relief, New York, 1912 (available also in German and shortly in Russian); The Contraction of Catgut and the Theory of Muscular Contraction (with William H. Strietmann), Kolloid Ztschr., 1912, x, 65 (available in English in Cincinnati Lancet-Clinic, 1912, cviii, 205); The Absorption of Water by Nerve Tissue (with Martin O. Hooker), Kolloid Ztschr., 1912, x, 283; A Response to Some Criticisms of the Colloid-Chemical Theory of Water Absorption by Protoplasm, Biochem. Bull., 1912, i, 444; The Theory and Practice of Perfusion, Kolloid-chem. Beihefte (with James J. Hogan), 1912, iii, 385; Physical Chemistry in Pharmacology and Therapeutics, Section in F. Forchheimer's "System on Treatment," 1912.

are old facts with which everybody agrees. Their explanation has been frequently given.[3]

Muscle consists, in the main, of protein material. When an acid is added to a protein its capacity for taking up water is greatly increased (it swells). If to the acid any salt is added (even such neutral salts as the chlorids of sodium, potassium and calcium) the swelling is greatly inhibited. The same thing happens in muscle. As soon as muscle is cut out of the body (separated from its blood-supply) it produces abnormal amounts and abnormally strong acids. If such a muscle is laid in water it therefore swells. The addition of more acid from the outside only increases the tendency to swell. If a salt or a mixture of salts is added (Ringer's solution) the swelling is inhibited, and if we add enough salt the muscle can be made to lose water. A "physiologic salt solution" or a "Ringer solution" is nothing but a sodium chlorid solution or a mixture of sodium chlorid with calcium and potassium chlorid (to which some add sodium bicarbonate as in Locke's solution), which, among other things, does not permit skeletal or heart muscle to swell appreciably when removed from the body.

Moore does not believe this. From his three experiments he feels that he is justified in concluding what is by no means new:

> It appears . . . that the muscle acts primarily as an osmotic system and secondarily as a colloid.

Moore makes the mistake of not regarding a "physiologic salt solution" or a "Ringer solution" as a man-made mixture which has been found by experimental means to be a better thing than water with which to bathe an excised muscle, but as a divine substitute for blood. Any number of facts show it to be nothing of the kind, but only a solution which, without having any markedly specific poisonous action, counteracts the effect of the acid produced in a muscle removed from its circulation. The laws of osmotic pressure are not being outraged when a muscle removed from its circulation is placed in water, for as long as the muscle is in the body it does not swell even though we drink great quantities of distilled water. Out of the body it swells at once, for no other reason than that out of the body the acid production is greater, so that the colloids acquire a greater hydration capacity. This colloidal swelling is further aided by the fact that in distilled water or in salt solutions of low concentration the muscle loses salt to the fluid in which it lies. In any salt solution, such as Ringer's solution, the acid production in the muscle occurs just the same, but the loss of salts from the muscle is inhibited or prevented altogether, and as there is an antagonism between acids and salts, as we have pointed out repeatedly,[4] the destructive action of the acid on the muscle does not so soon make itself felt in this as in distilled water. The Ringer solution, which Moore regards as "isotonic" with the excised muscle, would be found "hypertonic" if he tried it on the muscle still in the body, for out of the body the acid content runs higher.

In his second paper Moore says:

> It has been clearly pointed out by R. Beutner, and I have shown, that if instead the muscles be put into salt solutions, preferably isotonic, to which acid has been added, such muscles first act like osmotic systems and only later like purely colloidal ones.

3. See the first five references in Footnote 2.

4. Fischer and Moore, G.: Am. Jour. Physiol., 1907, xx, 330, and subsequent papers

We are glad to know that Moore agrees half way with us. Beyond this it becomes an ironical fact that Moore should not know that an American, Edward B. Meigs,[5] whose splendid work on muscle has found little recognition here, first raised and tried to answer the osmotic half of the question, on the basis of experimental findings that really have to be met. The subject has been dealt with in detail by William H. Strietmann and myself.[6] Our considerations would seem to indicate that there is no support for believing that any of the phenomena of water absorption in muscle are "osmotic." All the phenomena of contraction, relaxation, tetanus, residual contraction, the staircase, fatigue, etc., can be mimicked point for point by catgut, and the chemical conditions which bring these about are identical with the chemical changes that characterize these phenomena in the living muscle. Further, all the phenomena and the experiments which in muscle are designed to prove its "osmotic" behavior can be mimicked in catgut. Surely Moore would not maintain that several-months-old dry catgut has any "living" osmotic membranes left tucked away within itself.

As a matter of fact, the entire conception of an "osmotic membrane" about cells is an impossibility. An osmotic membrane is a "semipermeable membrane;" it allows a solvent (water) to pass through it, but holds back the dissolved substances. A semipermeable membrane about a cell would therefore permit water to pass in and out according to the laws of osmotic pressure, but no dissolved substances. Oxygen, carbon dioxid, salts and all manner of food metabolites could therefore neither enter nor leave the cell. It is known, of course, that physiologically these substances must do both, so the membranes are said to be "partially permeable." As soon as this is granted, those differences in osmotic concentration no longer exist which make it possible for the water to move; again it is known that physiologically this must also be possible. On the osmotic basis, we may have our choice but we cannot have both.

The colloid-chemical conception of absorption and secretion meets no such obstacles. Water and dissolved substances may here both move, independently of each other, and in the same or opposite directions, governed by the laws of equilibrium and as demanded by the facts of physiology.

Moore continues:

> It can easily be shown that acid content does not account for the swelling of muscle in Fischer's "artificial edemas." These edemas are produced by ligating the leg of a frog just above the knee, severing above the ligature and keeping the preparation in distilled water. It was found that these preparations increased in weight. Without attempting to obtain any direct evidence on the point, Fischer lets us assume that this increase in weight is due to the accumulation of acids within the amputated leg. I repeated the experiment and kept the preparations in tap-water for twelve hours. The result in each case was an increase in weight of 20 per cent., as shown in the accompanying table.

EXPERIMENT SHOWING EDEMA BY ABSORPTION OF WATER

Preparation	Weight—At Beginning, Gm.	Weight—After 12 Hours, Gm.	Increase in Weight, Per Cent.
No. 1	3.750	4.540	20
No. 2	3.805	4.630	20

5. Meigs, Edward B.: Am. Jour. Physiol., 1910, xxvi, 191; Ztschr. f. allg. Physiol., 1908, viii, 81; Am. Jour. Physiol., 1908, xxii, 477; Am. Jour. Physiol., 1909, xxxix, 358.

6. Strietmann, William H., and Fischer, Martin H.: Kolloid Ztschr., 1912, x, 65; reprinted in English in Cincinnati Lancet-Clinic, 1912, cviii, 205.

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At the end of the experiment the preparations were opened and the muscles found to be irritable. When the lymph and muscles were tested with acid fuchsin and neutral red, they were found to be neutral. Clearly, then, acid accumulation does not take place in the artificial edemas which Fischer has devised to prove his hypothesis.

Again Moore agrees with us on certain experimental findings, but the reasoning in the last paragraph is bad. Does Moore wish to go on record as maintaining that any amount of abnormal acid production in a muscle at once does away with its "irritability?" And why should lymph and muscle show an acid reaction to acid fuchsin or neutral red? I have never anywhere maintained that for an edema to develop the tissues had to be acid "in reaction." I have always said that there occurred an abnormal production or accumulation of acid in the tissues. This at times, though not of necessity, becomes sufficient to betray itself to an indicator. As the acid content of a tissue rises the acid combines with the protein (and certain other basic constituents) to form the acid-protein combination which has the greater capacity for holding water; but this acid-protein combination need not have an acid reaction to an indicator, as we have known from biochemical studies[7] on pure proteins since 1895. Clearly then an acid accumulation may take place in these artificial edemas without Moore being able to find it with his indicators. That it does occur has been known for over fifty years and does not depend for proof on any of my experiments. To use only the recent and the best work in this line it is sufficient to cite Fletcher and Hopkins, who found the acid content of the muscle to rise from the first minute of its excision. How then can Moore, with his faulty methods, say that there is no abnormal acid production at the end of twelve hours? As a matter of fact, the most sensitive indicator for acids which we have to-day is the swelling of a hydrophilic protein colloid. K. Schorr and R. Chiari could discover, through the swelling of a protein colloid, the difference in the acid content of ordinary distilled water and the specially distilled water that is used for conductivity experiments in our physicochemical laboratories. Such fine differences have heretofore been demonstrable only by electrical methods.

Moore says in his second paper:

Fischer . . . leaves unanswered the all-important question, Can acid accumulation account for the edema of living muscle?

All my writings on water absorption by the tissues are an answer to this question, though I confess to less skill in differentiating between a "living" and a "dead" muscle than Moore. It would be well for Moore to indicate what criterion he accepts as evidence of "life" in a muscle. On reading Moore's paper one would be led to believe that this is the presence or absence of rigor mortis, or possibly the presence of "irritability." A muscle in rigor mortis is contracted as much as possible, and since ability to contract when touched with electrodes is usually chosen as a sign of its "irritability" (and I do not think Moore used any more refined laboratory method than this), how could this determine whether the muscle was dead or not?

Even disregarding such obvious crudities in Moore's reasoning, acid accumulation can yet account for the edema of "living" muscle. All authors (except Moore) are agreed that the production and accumulation of acid in any organ runs up from the moment its circulation is interfered with, and if water is available it swells. Yet this organ retains for varying periods and in varying degrees evidences of "life." So a muscle, after removal from the body, and while its acid content is steadily increasing, is still capable of contraction when touched with electrodes, for hours maybe after it is removed from the body, as every one knows. As the acid runs up in the muscle it shows some of the evidences of "fatigue," and if water is available it swells. The slow, stiff, muscular movements of an edematous patient mean the same thing. Even under physiologic conditions a muscle may develop an edema. Whenever a muscle is exercised it produces acid (it is the cause of the contraction), and an active muscle absorbs water in a way that an inactive one does not, as we have known since Ranke's[8] studies.

Moore says:

On the other hand, Kantor and Gies have shown that free acid must be present in a solution in which fibrin threads are suspended in order that such threads may swell.

This statement has been answered several times before,[9] and Gies[10] and I now agree in all essentials.

Again, Moore says:

Von Fürth correctly calls attention to the fact that Fischer's colloidal theory of edema seeks to explain only the imbibition of water by the cells, while as a mater of fact the greater part of the fluid of an edema is outside the cells, lying between the tissues.

This argument was originally raised by Felix Marchand and was anticipated and answered in my first writings.[11] The fluid in edema lies both in the cells and between them. But what except water-saturated colloidal material lies between the orthodox cells? Even the mysterious "lymph-spaces" are not holes filled with air but contain water-saturated colloidal material (lymph) which behaves like the more solid material that makes up the cells. All this has been discussed a dozen times.

It is worthy of note that critics like Moore, who, in their own theoretic considerations, could only ignore all that lies between the "osmotic membranes" with which they surround their cells, constantly attack these colloid-chemical views which alone have been able to explain the behavior of the intercellular tissues and fluids. The intercellular substances, including blood and lymph, behave as do the cells themselves. The water in the intercellular substances, in the blood and in the lymph, is carried as hydration water, just as the water in the cells; and these can be and are given an "edema" under proper circumstances, as truly as any other protein colloidal constituent of protoplasm, be this cell or what not.

Moore continues:

Fischer's later work on "Nephritis" consists of an application of the experiments and arguments used in connection with edema to the more special problems of nephritis, and so criticisms of much the same character as those given on the earlier work apply here.

Briefly stated, the reasons for his theory are three:

1. Fibrin dissolves in acid or in alkaline, but not in neutral solutions, and this, to Fischer's mind, is what takes place in the cells of the nephritic kidney, thus giving rise to albumin in the urine. In order that the analogy may hold, then the secreting cells of the kidney must be acid in reaction.

Not at all. As acid is added to a neutral protein it combines with this, and the acid-protein combination has

7. Sjöquist, J.: Skand. Arch. f. Physiol., 1895, v, 277. Cohnheim, Otto: Ztschr. f. Biol., 1896, xxxiii, 489. Spiro, K., and Pemsel, W.: Ztschr. f. physiol. Chem., 1898, xxvi, 233. Bugarszky, S., and Liebermann, L.: Arch. f. d. ges. Physiol. (Pflüger's), 1898, lxxii, 51. Fischer: Nephritis, New York, 1912, p. 23.

8. Ranke: Tetanus, Leipsic, 1860.

9. Fischer: Nephritis, New York, 1912, p. 184; Biochem. Bull., 1912, i, 452.

10. Gies, William J.: Biochem. Bull., 1912, i, 461.

11. See the first ten references in Footnote 2.

a greater hydration capacity. As the amount of absorbed water rises the protein becomes more and more soft, and finally liquid; that is to say, it goes into solution; but unless an amount of acid has been added beyond the combining capacity of the protein for it, a readily appreciable increase in the number of free hydrogen ions, (on the presence of which an "acid reaction" at all times depends) does not occur. These are elementary facts of modern chemistry.

In stating my second reason, Moore begins:

2. It is shown by means of tables quoted from Höber that urine from nephritides is more acid than that of normal persons.

The combination between protein and acid is still of a disputed character, but in the low concentrations which are alone under discussion, in "living" protoplasm the combination is reversible. In other words, the acid after being put into a protein can be washed out again. If water (urine) is placed in contact with an acidified protein (nephritic kidney protoplasm) the water will have a higher acid concentration (to satisfy the laws of chemical equilibrium) than if the water is placed in contact with a less acid or a neutral protein. Hence, finding the urine of nephritics more acid than normal urine indicates that the protoplasm with which this has been in contact has a higher acid content than the normal kidney. The laws of equilibrium are always the same.

Moore continues:

Farther on in the book Fischer states (p. 184): "The presence of some abnormal acid in the urine does not yet prove that the actual acidity of the body as a whole has risen."

And it does not. To find an abnormal acid is a qualitative discovery, not a quantitative one. The finding of lactic acid in the stomach is the discovery of an abnormal acid there, but it does not prove that the actual acidity of the stomach contents has risen; in fact, in this illustration it means just the reverse, as in carcinoma.

Moore continues:

It is hard to see then how the abnormal acidity of the urine could be used as an argument for the acidity of any part of the body as, for example, the kidneys.

Not if one knows the laws of chemical equilibrium, and will distinguish between the quantitative and the qualitative elements in the discussion as I do in my books and as Moore seems unable to do.

Moore resumes:

3. Artificial albuminuria may be produced in rabbits by the injection of sufficient quantities of tenth-normal hydrochloric acid.

It is curious to note that Fischer goes to great pains to demonstrate that normal kidney tissue is neutral in reaction to acid fuchsin and sodium indigo sulphonate.

It was not necessary for me to demonstrate the neutral reaction of normal tissues and normal body fluids. Fraenkel, Farkas, Höber, etc., did this to perfection years ago. For the rest, Moore twists about one of my arguments which is correct as stated in my book, but not as he states it in the converse. Moore must know that many of our conceptions of the "secretion" of dissolved substances by the kidney depend on certain staining reactions of the kidney substance with acid fuchsin and sodium indigo sulphate. I have merely pointed out that a normal kidney does not stain with these dyes, and by discussing the staining reactions of proteins in the presence and absence of acid, have insisted that the staining of a kidney with these dyes is evidence of an abnormally high acid content in it. What some of the older authors considered "physiologic" in their experiments, I have therefore taken to be pathologic, and the anuria, the casts and albumin found in these older experiments prove that the kidneys in these animals were not in a "physiologic" condition. But absence of staining does not prove that the acid content of the kidney in any given kidney is not raised above the normal. A certain minimum of free hydrogen ions is necessary before any indicator betrays their presence, and while the hydrogen ion concentration in a kidney may be well beyond the normal concentration, it may not yet be sufficiently high to betray itself to acid fuchsin or similar indicators.

Moore then says of my work:

He then records a large number of experiments in which albuminuria was induced in rabbits by the injection of tenth-normal hydrochloric acid, made isotonic with sodium chlorid solution, but scrupulously avoids telling whether the kidneys in such cases were neutral or acid in reaction.

The injection of acid certainly increased the "acid content" of the body (including the kidney). That is the essential point, and an argument as to whether the kidneys were neutral or acid "in reaction" would add nothing. They might have been either without affecting the argument.

Moore says:

If sections of kidney in a case of artificial nephritis should test acid to indicators we should have good reason for trusting Fischer's theory.

This would contribute to the positive side of the argument, as when a kidney stains with acid fuchsin; but for obvious reasons absence of such findings proves nothing.

To quote still further:

In order to satisfy myself on that point I injected a 2,200-gm. rabbit with 175 c.c. tenth-normal hydrochloric acid made isotonic with serum by the addition of 2.5 mol sodium chlorid. The temperature of the solution was from 35 to 37 C. The injection occupied one hour. One-half hour after the injection had ceased the rabbit was catheterized and the urine found to give an abundant precipitate with phosphotungstic acid. The rabbit was killed by a blow on the head, the kidneys at once removed and sections of them tested for acid with neutral red and acid fuchsin. The result in all cases indicated neutrality of the secreting cells. Occasionally slight staining took place in the lining of the collecting tubes, just as in normal kidney.

Here, then, is a case of albuminuria, induced by acid injection, in which the kidney tissue retains its neutral reaction.

Certainly.

Then Moore says:

If more be needed to indicate the insecure basis on which the acid theory of nephritis rests I might refer to the fact that Fischer himself has shown that injections of solutions of the three sodium salts, sodium chlorid, sodium iodid and sodium bromid, frequently, though not always, cause albuminuria in rabbits. Burnett found that when sea water is made isotonic with blood-serum and injected into rabbits it gives rise to albuminuria.

Large quantities of solution have to be injected, and the lower the concentration of the salt the greater the likelihood of an albuminuria and a generalized edema.

I have explained this finding before.[12] Such large injections are all associated with an abnormal generalized production and accumulation of acid, as is evidenced

12. Fischer: Edema, New York, 1910, p. 204.

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by the rapid breathing, the fast heart, the cyanosis of the animal, etc.

And yet Fischer advocates to physicians the use of injections of salt solutions in cases of nephritis.

And still does.

If one can, for a moment, forget the skilful and convincing style in which the book is written, and set before oneself the meager evidence which Fischer uses for his theory, the lack of a few fundamental facts at once becomes apparent. . . . He goes on to argue most plausibly that edema in the living animal body is caused by an excessive accumulation of acid. He completely fails to prove that such is the case.

Moore concludes:

It would seem to be wisdom on the part of those engaged in the practice of medicine to view with extreme caution the use of any theory in practice which is founded mainly on argument based on a minimum of experimental evidence. It has been shown how slender is the experimental basis for Fischer's theory of edema and nephritis, and I should say that no matter how skilfully that writer has put his argument, his theory at present has no place in the practice of medicine.

I am constrained to say that it is difficult to answer in good humor such words, which lie well beyond the recognized limits of scientific discussion.

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THE PURPOSE AND LIMITATIONS OF BIO-ASSAY *

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A century ago, when a physician prescribed, for instance, tincture of opium, he had no way of knowing how much opium his patient would receive save by referring him to some druggist with whose preparations the physician had had previous experience. The evils of this confusion were so apparent that the country had hardly achieved political independence before the medical profession began to agitate for some means of providing uniformity in the materia medica. This agitation culminated in 1820 in the first publication of the first U. S. Pharmacopeia.

Although this work consisted merely of a list of crude drugs with formulas for preparing from them various galenicals, it represented an effort to reach at least an approximate agreement throughout the country in the activity of the commonly used remedies. The sixth revision of the Pharmacopeia, published in 1882, marked another great epoch in the progress toward exactitude in therapeutics, for in this edition was first officially recognized the importance of regulating the quality of the crude drugs from which were to be manufactured the various medicines. There were added, with this in view, not only a description of the appearance of the vegetable drugs, in order that sophistication and adulterations might be the more readily discerned, but also methods for the chemical determination of the percentage of alkaloids in opium and cinchona.

This last innovation was the beginning of an advance in practical therapeutics the importance of which can scarcely be overestimated and an aid for which the medical profession must forever remain indebted to pharmacy. In the early enthusiasm over chemical assays the professions believed that they had found the panacea which should cure all the evils of uncertainty dosage. It seemed simply a question of time before chemists should discover the active principles of all the potent drugs, and having discovered these, what seemed simpler than to find a means for their quantitative extraction?

Pharmaceutical chemists, especially in this country, attacked the problem with an energy and a determination which would have stormed a Gibraltar. But thirty years of endeavor, while they have greatly extended and perfected the methods of chemical assays, have demonstrated that there are inherent limitations in the art which may perhaps never be overcome.

There is apparently a great group of principles which it is at present impossible to separate in anything approaching completeness or purity. Indeed, up till now the chemical assay has been applied satisfactorily (with one or two exceptions) only to those drugs containing alkaloids, and not to all of these. The U. S. Pharmacopeia VIII, at present official, contains 140 crude vegetable drugs, of which fifty-three are capable of exercising an appreciable effect on the system when given in single dose—that is, are physiologically active. Of these fifty-three only fifteen are officially required to be standardized and it is doubtful if any chemist can satisfactorily test the others. In other words, less than one-third of our potent vegetable drug remedies are susceptible of assay by chemical means. This lack becomes all the more painfully evident when we remember that in the thirty-eight non-assayed drugs are included such powerful substances as lobelia, digitalis, cannabis indica, veratrum, ergot, squills, etc.

The idea of using tests on the lower animals as a means of determining relative therapeutic efficiency seems, like most other important scientific advances, to have been one of gradual growth, so that while many men deserve much credit for their part in its development no one may claim the glory of having been its originator. The thought existed in an embryonic form at least as far back as 1880, but it has reached a conscious, purposeful existence only in the present century. Within the last few years it has been exalted to the position of a fetich; it has been apotheosized by commercial interests and therapeutic incense burned to it as the deliverer from all pharmacologic uncertainties. As one who has been privileged to serve as an acolyte in the temple of this therapeutic deity I thought you might perhaps be willing to listen for a few minutes to what are, in my opinion, the purposes and the limitations of the so-called physiologic assay.

THE BIO-ASSAY

The underlying principle of physiologic standardization, or as those engaged in this work prefer to call it, the bio-assay, is to determine the quantity of a given sample of drug required to produce some easily recognizable effect on a lower animal. By comparing this with the amount of a standard preparation which will produce the same reaction, one can figure out the relative therapeutic dose. In other words, some physiologic or toxic effect, which may or may not represent a useful therapeutic action, is taken as a criterion of the remedial efficiency of the sample. For instance, in testing digitalis the following method is often employed: Frogs of the same species are carefully weighed and injected with doses of the drug to be tested which are, respectively, smaller, the same and larger than the amount of a stand-

* Read in the Symposium on Drug Standards in the Section on Pharmacology and Therapeutics, of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

ard preparation shown by previous experiment to be just sufficient to arrest the heart in systolic spasm within a period, say, of twelve hours. After this period has elapsed the three series of frogs are examined and if those which received the smallest dose are alive and those which received the middling and larger dose are killed the preparation is deemed to be of just standard strength.

In this instance the toxic power of digitalis to cause systolic spasm in the frog's heart is used as an index of its therapeutic potency, although of course we do not employ the drug for this purpose clinically. It is probable that the toxic qualities of physiologically active drugs bear more or less relation to their useful physiologic activities, although in the case of such substances as digitalis, which contains several active ingredients, we cannot be absolutely certain that this ratio is a close one. The work of Hatcher as to the comparative poisonousness of strophanthin and digitoxin for the frog and the mammal shows that we must be a little cautious in drawing too positive opinions of the absolute value of the "heart toxic unit" as indicative of the proper dosage of members of the digitalis series.

While the bio-assay must be acknowledged as a great step forward in the direction of accuracy in our materia medica, its field of usefulness is at present pretty narrowly limited by certain factors, some of which seem to be inherent in the method and some of which are due to the comparatively undeveloped status of the art. As yet we cannot apply this test with any real satisfaction to more than one-third of those substances which I have mentioned as being in need of some standardization.

The chief reason that the list of agents susceptible to this test is so short and one not likely to be greatly extended in the near future is the necessity of an end-reaction—to borrow a chemist's term—which is at once clearly defined and bears some relation to the physiologic utility of the drug. To take as a standard for veratrum the amount required to kill is useless because the drug kills by its effects on the respiration, while it is used clinically for its influence on the circulation and it has several alkaloids which differ much in their influence on the circulatory and respiratory mechanisms. The great value of phenolphthalein to the chemist as an indicator of alkalinity lies in the smallness of excess of alkali needed to produce a deep purple color in a colorless solution; if the change was a gradual one, first a faint pinkish hue which became more and more pronounced as the alkalinity increased, it would be almost useless for its present purposes as a reagent. It is for an analogous reason that our efforts at the standardization of cannabis indica have been so futile. A small dose of this drug given to a dog produces a slight but not recognizable disturbance of the central nervous system, and the dog seems perhaps a shade quieter than ordinary or perhaps a little unsteady in its movements; but who can say that this may not be due to some accidental circumstance? As the dose is increased the toxic manifestations become more marked until the merest tyro could recognize the characteristic symptoms, but at no time is it possible to mark sharply any certain stage in the poisoning.

There are two other present-day practical limitations to the application of this bio-assay; one, however, time will probably remove. These are, first, the absence of lack of agreement as to the reliability of methods which have been suggested even for those drugs with well-marked physiologic end-reactions; second, the inadequate supply of qualified experts to make the tests. It is as foolish for a pharmacist without practical training in animal experimentation to attempt the physiologic standardization as it would be for one who had never held a test-tube in his hand to try a chemical assay.

I wish to call attention to what is in my opinion the most serious source of weakness of all, at least as far as the practicing physician is concerned. Suppose we have a drug with a sharply cut physiologic action, and suppose we have a good method of bio-assay for it, and a skilled and careful pharmacologist makes the test and finds that the sample is of good quality, what promise have we that it will be up to standard when it reaches the patient? Do you know that it is the custom of drug manufacturers to keep all galenicals from nine months to two years before they put them on the market? Do you know that after the drug leaves the makers it may stand on the jobber's shelves another year or two before it goes to the retailer? And heaven only can tell how long it has been reposing in the apothecary shop when the patient comes in with the prescription of some optimistic doctor who relies on the manufacturers' shibboleth, "physiologically standardized." You recall the little tin soldier that was covered with rust: it was passing fair when the little boy blue tested and put it there. But the years they come and the years they go and the rusty musket in the hour of need fails in the battle against disease. Is it the fault of the bio-assay?

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ABSTRACT OF DISCUSSION

MR. C. E. VANDERKLEED, Philadelphia: Dr. Wood has pointed out one of the most difficult problems with which the furnishers of standardized preparations have to contend, namely, the question of deterioration. It is true that the alkaloidal drugs for the most part are quite stable. With regard to some of the other drugs which are not so amenable to chemical assay, for the standardization of which we must depend on the physiologic or bio-assay, this problem of deterioration is very difficult to solve. We know that a fresh ergot of good quality will produce a marked rise in blood-pressure when the solution or extract is injected intravenously into an animal. We know also that the fresh drug will produce a blueing of the comb when injected into the muscles of certain roosters. The third thing we know about ergot is that it contains not less than 0.15 per cent. of total alkaloids. All these observations are true, irrespective of the question whether or not the particular phenomena indicate the therapeutic usefulness of that drug. The forth point is that no one isolable active principle can be depended on to produce the effect of ergot active principle. The fifth is that such a preparation when made up will rapidly deteriorate. To test protection against this deterioration we prepared in the laboratory of H. K. Mulford & Co. a fluid extract of ergot which possessed the qualities I have enumerated and put up four portions of it in four different ways, as follows: The first portion was put in ordinary pint bottles, set on the shelf and taken down from time to time for removal of portions for testing. A second portion was put up in 1-ounce sealed packages. A third portion was put up in packages not sealed, rather loosely stoppered. A fourth portion was put up in 1-ounce ampules from which the excess of air was removed, i. e., vacuum ampules. At the end of the year we tested all four portions by means of the chemical assay and the blood-pressure test. When the preparation was originally tested in May, 1911, a maximum rise of 45 mm. in blood-pressure was produced. At the end of the year, May 6, 1912, that portion put up in vacuum showed a maximum rise of 49 mm. That portion which had been put up in tightly corked sealed packages, but not in vacuum, at the end of a year gave a rise of 30 mm. The loosely corked material gave a rise of only 16.5 mm. and the preparation which had been opened from time to time and parts used, gave 15 mm. as the maximum rise. The original chemical test showed 0.163 per cent.

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total alkaloids; the vacuum package at the end of the year showed 0.168 per cent. The package which had been opened from time to time showed less than 50 per cent. of the original. It is evident therefore that the preservation of preparations of this kind in vacuum is a step in the right direction.

DR. C. B. LOWE, Philadelphia: It may be possible for the pharmacists to work out the limit of activity of these preparations and that limit could be placed on the containers and then they should be marketed only in this way.

CHLOROMA

A CLINICAL STUDY OF TWO CASES *

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It is interesting and instructive to follow the history of chloroma. During the ninety years since the first description, frequent changes have developed in the conception of this rather peculiar disease process.

The earlier observers were unable to classify its bizarre clinical picture with the predilection of tumor localization to the cranial and facial bones, the growths of greenish color, and associated painful exophthalmos, deafness and visual disturbances.

The conclusions in vogue were frequently upset as the knowledge of the pathologic anatomy and histology of the greenish tumors, and, later, of the hematology developed, and while in recent years a more careful study of chloroma, which is still a rare disease, has brought a clearer idea of the separate phases, the ultimate nature of the disease process is still unsolved.

The number of examples of chloroma described during the past nine decades, including doubtful cases, numbers about ninety.

Interesting reviews of reported cases are given by Lang[1] (1894, fourteen cases), Heyden[2] (1904, thirty-seven cases), Dock-Warthin[3] (1904, thirty-eight cases), Weinberger[4] (1907), Benjamin-Sluka,[5] Fabian[6] (1908, fifty-seven cases), and Lehndorff[7] (1910, seventy-three cases).

The first description was given by Allan-Burns[8] in 1821. In the next fifteen years only three cases were reported, Mackenzie[9] 1831, Balfour[10] 1834, Durand-Fardel[11] 1836. The green color of the tumors is prominently mentioned by these early writers, and Aran,[12] in 1854, referred to the process as *cancer vert* or green cancer.

The name, "chloroma," was first proposed by King[13] in 1853, and in using this title he refers to it as if it were well known, yet no previous reference to it can be found.

Many of the earlier writers regarded the process as sarcoma, with the primary site in the periosteum of the cranial and facial bones, and metastases in the internal organs. This was the view expressed by Huber[14] in 1878, and Chiari[15] in 1883, both of these writers preferring the name "chlorosarcoma." Virchow did not mention it in his first edition of tumors, but considered it in 1866 when he classed it as sarcoma.

Huber's description of his case in 1878 constitutes the first instance in which a blood examination was made, but the significance of the blood-changes was not recognized.

A leukemic blood-picture was first confirmed *in vivo* by Waldstein,[16] in 1883, who regarded the disease as extending clinically into the field of pernicious anemia and leukemia, yet because of its unusual course, he felt it could not be reconciled with leukemia. This observation withdrew chloroma from the field of malignant tumors.

Von Recklinghausen,[17] in 1885, definitely associated chloroma with leukemia, because of the similarity of the two processes in histologic structure; he regarded the lymphoid character of the tumors and their multiple dissemination in tissues of lymphoid nature, as the real nature of the process.

Dock,[18] in 1893, was the first American writer to refer to the disease in detail, and independently of von Recklinghausen made a strong argument for a relationship between chloroma and leukemic processes; he called special attention to the similarity in clinical picture, regarding the disease as a lymphoid process with a clinical expresssion similar to leukemia or pseudoleukemia; he also referred to a distinct histologic difference between chloroma and periosteal sarcoma, in that giant cells or signs of ossification were not present in the lymphoid growths of chloroma.

Subsequently to this contribution attention has been mainly directed to the study of the blood-changes and now chloroma is mentioned largely in works on hematology, or referred to as a form of lymphatic leukemia.

The most important contribution on the basis of hematologic studies was the discovery of a second type of chloroma, the myeloid chloroma, by Turck[19] in 1903, Klein-Steinhaus[20] and Sternberg[21] in 1904, which further extended the conception of the process.

Singularly enough, the most characteristic and prominent symptom, the greenish color of the tumors, has been studied the least, and thus far very little definite knowledge obtains in regard to it.

While opinions still vary as to a closer definition, there is at present a general agreement that chloroma belongs to the primary diseases of the lymphoid hematopoietic apparatus, or is a general disease of the blood-making parenchyma.

It is interesting to note that the two cases which form the basis of this study came under observation within the course of the same year, and in each instance first came to the attention of my surgical colleague, Dr. Oliver J. Fay.

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* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

* Because of lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

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3. Dock-Warthin: Tr. Assn. Am. Phys., 1904, p. 64.
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6. Fabian: Zentralbl. f. allg. Path. u. path. Anat., 1908, xix, 49.
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8. Allan-Burns: Observations on Surgical Anatomy of Head and Neck, Baltimore, 1823, p. 386.
9. Mackenzie: Treatise on Diseases of the Eye, 4 Ed., Philadelphia, 1855, p. 91.
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11. Durand-Fardel: Bull. Soc. anat. de Paris, 1836, xi, 195.
12. Aran: Arch. gén. de méd., Series 5, 1854, iv, 385.
13. King: London and Edinburgh Monthly Jour. Med. Sc., 1853, xvii, 97.
14. Huber: Arch. f. Heilk., 1878, xix, 128.
15. Chiari: Ztschr. f. Heilk., 1883, iv, 177.
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19. Turck: Mitt. d. Gesellsch. f. inn. Med. u. Kinderh., 1903, p. 39.
20. Klein-Steinhaus: Zentralbl. f. allg. Path. u. path. Anat., 1904, xv, No. 2.
21. Sternberg: Beitr. z. path. Anat. u. z. allg. Path., 1904, xxxvii, 437.

CASE 1.—*Family History.*—Dorothy X, 19 months of age, was seen with Dr. C. D. Busby, Brooklyn, Iowa, Oct. 29, 1910. Father of the patient is a farmer, in good health; the mother is well; two older children in the family are in good health; the general family history is negative.

Previous History.—The patient's birth was normal, and she has had no illness previous to the beginning of the present condition. The mother stated that in the eight weeks before consulting a physician, the child had not seemed as well as usual. At first a mild diarrhea was a feature, she became peevish and restless, the appetite was impaired, and a moderate fever developed occasionally, all of which was attributed to dentition disturbances, and Dr. Busby was not called until a few days previous to my visit, and then only because of a swelling in the right upper eyelid, and the discovery of a large "lump" in the left side of the abdomen. It was also at this time that my colleague, Dr. Fay, was consulted for advice as to surgical treatment, which in his opinion was not indicated.

Examination.—Oct. 29, 1910, the patient appeared restless, distressed and pale. Her mental state was clear. The right upper eyelid was swollen and slightly ecchymosed. There were no exophthalmos or retinal changes; the pupillary reflex was normal; the scalp was not tender and presented no special abnormalities. A limited number of lateral cervical

Fig. 1.—Dorothy X., aged 19 months; duration of illness, four months. Exophthalmos, blindness, periosteal tumors of the cranial and facial bones. Photograph taken three weeks before death (Case 1).

lymph-nodes were palpably enlarged. The chest was of normal shape and the spine was straight and flexible. The heart and lungs were normal. The abdomen was distended principally in the upper portion; free fluid was not demonstrable.

The liver was enlarged, being palpable 2 cm. below the costal margin. The spleen extended below the costal margin, the edge being palpable as far forward as the median line, and as low as the umbilicus; the consistency was firm; the surface was smooth, with the notch well defined. The enlarged spleen constituted the "lump" that had been noted by the mother. The axillary and inguinal lymph-nodes were not enlarged. The extremities were normal. Pressure over the long bones and the sternum did not cause pain. The urine findings revealed an acid reaction and specific gravity, 1.016; albumin, sugar or pathologic sediment were not present. A test for albumose was made with a negative result.

The blood examination revealed the following: hemoglobin 70 per cent. (Tallqvist), red cells, 4,190,000, leukocytes, 18,800. Differential count of 200 white cells: polymorphonuclears, 33 per cent.; lymphocytes, 23 per cent.; large mononuclears, 42 per cent.; myelocytes, 2 per cent.; special changes in the erythrocytes were not noted at this examination.

Diagnosis.—In view of the enlarged spleen and associated blood findings, a tentative diagnosis of leukemia was proposed, although the exact type was difficult to determine.

Course.—Through the kindness of the attending physician, Dr. Busby, I received frequent reports in regard to the child's condition, blood-counts, and a large number of carefully prepared blood-spreads for examination. The blood rapidly assumed the character of a severe anemia, the hemoglobin percentage became low, the red cells were gradually reduced in numbers, and with this erythrocythemia, changes in form and size, poikilocytosis, polychromasia, and nucleated red cells were noted; the leukocytosis became more marked, with a large mononuclear non-granular or large lymphocyte type of cell predominating. The patient became rapidly weaker, digestive disturbances were more marked; within three weeks after the first examination a prominence of the left eye was noted, with the development of a number of distinct tumor-like swellings in the scalp over the region of the temporal and parietal bones. With this report a diagnosis of chloroma was entertained.

On December 7 I was privileged to see the patient a second time, and was impressed by the marked change in the appearance from that noted at the examination five weeks previous. The child was very pale, greatly emaciated and appeared listless and drowsy. A marked proptosis existed in both eyes, both upper lids being discolored by an extensive extravasation of blood. The scleræ were of a pearly icteric hue. The conjunctivæ were pale. The general surface of the scalp was irregular by reason of numerous circumscribed swellings. Of these there were a number on the temporal, parietal and occipital bones. The lower portion of the frontal bones bulged forward prominently, evidently owing to growths from the upper wall of the orbit. These growths varied in size from 1 to 3 cm. in diameter, being flat sessile growths, firmly connected with the periosteum of the cranial bones, and where not covered with hair presented a dark greenish color, which showed well through the thin and anemic skin.

Behind the right ear were two small nodules of hazel-nut size, freely movable, which also presented a greenish color. The deformity in the skull and upper portion of the face produced by the tumor formations gave the facial aspect a peculiar "frog-like" appearance. Several photographs of the patient were secured at this examination (Figs. 1 and 2).

The anterior and posterior cervical lymph-nodes were enlarged, though not more noticeably than at the previous examination. The axillary and inguinal lymph-nodes were slightly enlarged. There were no localized swellings to be detected over the sternum, ribs or long bones. Numerous moist râles were heard over the lower portions of both lungs. A systolic murmur was heard over the entire precordium. The abdomen was distended, although the spleen did not appear to be as large as formerly, extending only 3 cm. below the left costal margin. The liver was palpable and slightly enlarged. The extremities were emaciated. Partial bowel and bladder incontinence was present. The body temperature was 101 F., pulse 140 and respiration 42.

The blood examination revealed: hemoglobin, 40 per cent. (Tallqvist); red cells, 1,650,000; leukocytes, 55,200. Differential count: neutrophilic polymorphonuclears, 41 per cent.; eosinophilic polymorphonuclears, 4 per cent.; large mononuclears, 51 per cent.; large lymphocytes, 4 per cent. The erythrocytes revealed the changes peculiar to a pernicious anemia and a moderate number of megaloblasts were observed.

The clinical picture of chloroma was so distinct that a diagnosis could be made without difficulty.

After this time the child failed rapidly and soon became totally blind; the eyes discharged freely and she suffered severe pain, especially about the head and eyes. The patient died Dec. 27, 1910, at the end of a four months' illness. A post-mortem examination unfortunately was not permitted.

The study of the clinical symptoms in this case was specially interesting because the picture of chloroma developed, as it were, "under the eye," and permitted a

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diagnosis to be made fully forty days before the death of the patient.

The sequence of events included general weakness, splenic tumor, severe anemia, leukocytic formula of lymphatic leukemia, followed by the characteristic tumor formation with the coincident changes peculiar to chloroma.

CASE 2.—*Family History.*—Ruby W., aged 3 years, was seen with Dr. O. J. Fay, Sept. 28, 1911, on account of enlargements of the skull in the temple region, ecchymotic suffusion of the upper eyelids and pallor of the skin. Her father and mother are alive and well. She is the youngest child in the family, there being two older children which are in good health.

Previous History.—The patient's birth was normal, and she has been a strong and healthy child until the present illness, which, according to the mother, began two and one-half months ago, with gradually increasing pallor and physical weakness; about a month ago both temples began to swell, being more marked in the right, which swellings have continued to enlarge. The right eye soon became prominent and both upper lids appeared swollen with deep-seated ecchymosis under the skin. The appetite was impaired; vomiting was not present. The bowels were normal; the patient had gradually lost in weight, and during the last month the abdomen has apparently enlarged.

Present Condition.—The patient is very pale, the skin having an icteric hue; the mucous membranes are pale; her mental state is clear; the face presents a peculiar broadened "frog-like" appearance; exophthalmos is present in both eyes, being more prominent in the right. Both temporal regions are prominent and bulging, owing to the presence of flat sessile growths firmly adherent to the periosteum, and evidently to a certain extent extending into the bone itself; behind both ears several distinct tumors are present, which are hazel-nut in size, with flat base, and of dark greenish color. The tongue is normal. The mouth and teeth are in good condition. Vision and hearing are slightly impaired.

The lymph-nodes of the cervical axillary and inguinal region are not specially enlarged. The chest is emaciated and symmetrical, but expansion is equal. The lungs are normal. The heart is not enlarged; a faint systolic murmur is heard over the basal region; the beat is accelerated, the pulse being rapid, regular and of normal tension. Temperature is normal. The abdomen appears enlarged in the upper half, and palpation reveals a marked enlargement of the liver, the lower border extending to the umbilicus line; its surface is smooth and not specially sensitive. The spleen is palpable 2 cm. beyond the left costal margin. Free fluid in the abdomen is not demonstrable. The extremities present no abnormal change.

The urine is acid, specific gravity, 1.016; albumin, sugar and glucose are not present.

Blood-findings: hemoglobin, 50 per cent. (Tallqvist); red cells, 1,800,000; leukocytes, 13,000. Differential count of 200 white cells: polymorphonuclears, 54 per cent.; large mononuclears, 33 per cent.; lymphocytes, 13 per cent. The red cells revealed marked changes in form and size, and poikilocytosis, polychromasia and a few normoblasts were noted.

Diagnosis.—The characteristic facial aspect of the patient, localization of tumors, exophthalmos, hemorrhages and leukemic blood-picture permitted the diagnosis of chloroma.

Course.—The patient was seen a second time Oct. 12, 1911, when the accompanying photographs (Figs. 3, 4, and 5) were secured. The child appeared weaker, the exophthalmos, periosteal tumors and anemia all being more prominent. The blood-picture was practically the same as at the first examination. From this time the patient failed rapidly, the exophthalmos and cranial tumors becoming specially prominent, and she died Oct. 24, 1911, about three and one-half months following the first appearance of any appreciable symptoms.

It was distinctly unfortunate that an autopsy was not permitted in either of these two cases; the permission to take the photographs was secured under the greatest difficulties, so that the refusal of a post-mortem examination was not surprising, even though it was a great disappointment.

In the general consideration of chloroma, we must admit that it constitutes a rare picture in human pathology, and that its clinical expression preserves a more or less constant symptom-complex, even though well-marked variations from the common type are observed. It is distinctly an affection of early life, as one-half of the cases observed occurred in childhood. The youngest patient on record, a child 10 months of age, was observed by Paviot and Fayolle[23] and the oldest, a man 68 years old, was reported by Butterfield.[24]

Of the seventy-three cases gathered from the literature by Lehndorff, fifty occurred in the male sex.

The disease apparently has very little relation to previous disease conditions, and usually is found in healthy children of healthy parents. Rickets is occasionally mentioned; hereditary lues was not definitely present in any instance, and there is no definite relation given to any previous or accompanying infectious disease. Trauma apparently has no relation to the disease.

With the experience of recent years, and a better conception of the chloroma picture, a tendency has developed

Fig. 3.—Ruby W., aged 3 years; duration of illness, three and one-half months. Periosteal tumors (lymphoma) of temporal, parietal and frontal bones. Unilateral exophthalmos. Photograph taken four weeks before death (Case 2).

to disregard a distinct clinical type or symptom-complex as characteristic of chloroma. Pfeiffer,[25] in 1906, referred to chloroma of the skull as the typical clinical type, and this is the form which is usually observed, presenting a clinical picture which can be easily recognized.

The characteristic pathologic anatomic changes in the form of lymphoid tumors and associated blood-changes are a significant feature of the disease, and offer a logical explanation for the sequence of occurrence and rather definite association of the characteristic symptoms.

The painful exophthalmos, with gradual developing visual disturbance, earache and deafness, frequently first directs the patient to the specialist, and that probably accounts for the fact that the earlier cases reported were first seen by the oculist or the aurist. In rare instances, the internist is consulted by reason of the progressive anemia, general weakness and purpuric or hemorrhagic manifestations. When once the disease is manifest, it takes a rapid course, being more marked in younger patients. The average duration is from three

23. Paviot and Fayolle: Prov. Med., March 20, 1897, p. 139.
24. Butterfield: Folia hematol., 1909, viii, 179.
25. Pfeiffer: München. med. Wchnschr., 1900, xlvii, 1909.

to four months. Only in rare instances (Huber,[14] Schmidt,[26] Dock,[18] Stienon[27]) was a course of more than a year reported.

The spread of tumors in the cranial and facial bones explains most of the characteristic symptoms. Tumors in the orbit produce a marked prominence and crowding of the bulb, giving rise to the symptom of exophthalmos, and, as the lids are unable to cover the bulb, the sight soon becomes disturbed and finally destroyed. As the tumor spreads on the facial bones and the temporal region, the deformity produced in the skull leads to a peculiar "frog-like" aspect, which permits of an easy diagnosis at the first glance.

By the predilection of the tumors for the periosteum and dura mater of the cranial bones, the involvement by pressure of the cranial nerves is easily explained. It is peculiar that only three nerves are usually involved, the optic, by reason of orbital pressure, the facial and the auditory, on account of the involvement of the temporal bone.

The exophthalmos is usually associated with pain, because of the crowding of the bulb, and in this respect differs from other forms of exophthalmos. The gradually developing deafness is often preceded by marked roaring in the ears, and a very distressing earache. Involvement of the facial nerve gives rise to paresis, and, again, to distinct facial paralysis.

In regard to general symptoms, aside from these which may be directly attributed to the tumor formation, there is an early weakness noted in all cases, and the patient soon becomes bedridden. The sensorium often remains clear to the end, although in the later stages apathy, stupor and a coma may supervene. As the anemia becomes more marked the patient assumes a cachectic appearance and various symptoms attributable to the anemia become manifest. Of these, hemorrhages into the submucous and subcutaneous tissues are a prominent feature. Vomiting, hematemesis, diarrhea and dysentery are occasional symptoms. Icterus is rare.

Since the work of Recklinghausen and Dock suggesting that chloroma is closely related to leukemia and generally accompanied by leukemic blood-findings, greater attention has been directed toward the study of the blood and the blood-making organs. It is significant that in the more recent studies a greater importance is given to qualitative changes in the blood-elements, so that frequently a leukemic blood-picture has been recognized even though the general number of white cells was not much above the normal figure.

Two distinct forms of chloroma are now recognized, the lymphatic and the myeloid, the former being much the more frequent. The leukocytic formula in lymphatic chloroma is generally characterized by an absolute or relative increase of large mononuclear non-granular cells, while other cell types, particularly in granular forms, are proportionately diminished. Very marked examples of absolute leukocytosis are reported, as Dock[18] 743,500, Rosenblath[31] 300,000, Stevens[32] 491,600, Stienon[27] 1,880,000, while again cases are reported with very low leukocyte figures, as Bramwell,[33] Meller[34] 6,800. In some instances the predominating leukocyte has been a small lymphocyte, but these observations are evidently quite exceptional.

Considerable discussion prevails in regard to the significance of these large mononuclear cells. There seems to be a consensus of opinion that they are not types of normal blood, but are pathologic cell forms; the greatest interest is centered in them in connection with chloroma, whether they are to be regarded as cells of the hematopoietic parenchyma that have become differentiated and atypical, or as neoplastic cell elements.

It is interesting to note that while these cell forms have been observed in cases of leukemia they have usually prevailed in those leukemic processes that were characterized by lymphosarcomatous development in different tissues.

In both forms of chloroma the hemoglobin content is usually greatly diminished, the red cells becoming also variably reduced in number from 3,000,000 down to 1,000,000, and even less per cubic millimeter. The color index is usually minus. The morphology of the red cells is such as characterizes the different severe anemias, and changes in form and size, poikilocytosis, polychromasia, and occasional basophilic degeneration, have been observed.

Nucleated red cells, as normoblasts and megaloblasts, are frequently noted. The erythroblasts are seen to be most numerous in the younger patients. The anemia usually becomes more pronounced in the later stages of the illness and is often augmented by external influences, as excessive hemorrhage through epistaxis, hematemesis, hematuria, etc.

Chloroma seems to be specially characterized by the malignancy of its manifestation, the tendency to aggressive proliferation, giving it the character of leukosarcomatosis as designated by Sternberg,[21] Paltauf,[35] and others.

DIAGNOSIS

The diagnosis of chloroma is in most instances easily made at the first examination, but again may present considerable difficulty. The characteristic predilection of the tumors for the cranial and facial bone, exophthalmos, facial paralysis, visual disturbances, deafness, deformity of the skull, with a characteristic "frog-like" aspect, are so distinctive as to be recognized at the first glance. When these symptoms prevail as they do in a large majority of the cases, a classification of a definite clinical type is justified. The associated blood-changes are the usual findings, but the blood-picture cannot at any time be regarded as specially pathognomonic of chloroma. The blood examination may be helpful in differentiating between the two special types of chloroma. As the lymphoid infiltrations present themselves more prominently in other tissues the clinical picture will not be so distinct. A considerable number of chloroma cases without localization of tumors of the cranial or facial periosteum have been reported more recently. In fact, of the fifteen cases of myeloid chloroma now on record, only two presented the symptom of exophthalmos, and ten of the cases had no periosteal involvement at all, either in the cranium or any of the bones of the body.

In the differential diagnosis, malignant tumors — especially osteosarcoma — are to be considered; in those cases in which the tumor formation is not prominent, the clinical picture may resemble pernicious anemia, acute sepsis, scorbutus or a septic diphtheria. With a better conception of the disease process, chloroma is now being diagnosed more frequently than formerly, as is evident from the noticeable increase in the number of cases reported within recent years.

26. Schmidt: Inaug. Diss., Goettinger, 1895.
27. Stienon: Arch. d. mal. du cœur, des vaisseux et du sang, 1909, ii, 497.
31. Rosenblath: Deutsch. Arch. f. klin. Med., 1902, p. 1.
32. Stevens: Glasgow Med. Jour., 1903, p. 1.
33. Bramwell: Brit. Med. Jour., 1902, p. 453.
34. Meller: Arch. f. Ophth. (Graefe's), 1906, lxii, 130.
35. Paltauf: Mracek Handb. d. Hautkrank., IV Wien., 1909.

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PROGNOSIS.

The prognosis of chloroma is like that of acute leukemia and similar processes in which the hematopoietic system is primarily involved, in that the outlook is distinctly hopeless. The course is always more rapid and malignant in the younger individual.

TREATMENT

In view of the nature of the disease process, treatment can be directed only toward a relief of certain symptoms of the disease, particularly hemorrhage. No form of etiologic therapy exists. The *x*-ray has been applied with no appreciable result.

PATHOGENESIS AND CONCLUSIONS

With the etiology of chloroma still obscure, any discussion of pathogenesis, definition or classification must be dependent on careful clinical studies, and a critical consideration of the views of the different observers.

Two views evidently prevail at the present time in regard to the nature of chloroma; in one it is identified with leukemia, and the other regards it as a sarcomatosis.

A number of observers (Pappenheim,[39] Sternberg[21]) hold the extreme view that all leukemias are to be regarded as malignant hyperplastic processes, and thus would harmonize the two prevailing views.

Of particular mention among the later publications is the article of Schridde,[40] who classifies chloroma with the pure new growths of the blood-making organs, describing the lymphatic type as chlorolymphoma, and the myeloid as chloromyeloma.

In the same work Borst[41] refers to chloroma as sarcoma of the lymphomyelo-erythroblastic tissues, with occasional leukemic blood-findings.

There is a tendency, in proposing different names for the process in question, to be influenced by the particular view that the author may entertain of the pathogenesis. In this respect the term chloroma, which designates it as a tumor, is hardly as appropriate as it might be.

A satisfactory definition of either leukemia or chloroma will hardly be acceptable until the etiology of the systemic affections of the hematopoietic tissues is more clearly understood.

In the light of present knowledge the following conclusions can be proposed.

1. Chloroma is not a distinct disease entity.
2. It belongs to the primary diseases of the blood-making parenchyma.
3. It is a generalized systemic affection of the lymphoid hematopoietic apparatus characterized by the tendency to malignant growth and heterotopic localization of its greenish pigmented infiltrations.

1210 Equitable Building.

ABSTRACT OF DISCUSSION

DR. ALFRED STENGEL, Philadelphia: Chloroma is generally regarded as a form of tumor, though the blood-picture is distinctly that of leukemia. On the other hand, there are cases of leukemia in which, in the later stages or sometimes throughout the clinical course, tumor-like growths appear in the skin. Histologically, the growths are similar to the leukocytic infiltrations or masses in other places. There is, therefore, a suggested relationship in both directions between these diseases.

DR. E. LIBMAN, New York: Five years ago I made some observations on chloroma which are, I believe, of diagnostic value. A man was admitted to the hospital with the clinical picture and blood-findings of acute leukemia. In the blood there were many cells that looked like the giant-cells one sees in some cases of lymphosarcoma. Although no bone tumors were evident, I therefore suspected that the case might belong in the so-called leukosarcoma group and might be a case of chloroma. In cases of chloroma it appears at times that some of the masses are not pigmented or very slightly so. At the autopsy the retroperitoneal nodes were found to be green. There were no bone tumors. Later I had another case of chloroma without evident bone tumors, which was diagnosed in the same way. A third case occurred in which the blood-findings were present, but no autopsy was allowed. I showed specimens from these cases to members of men prominent in our profession, including Dr. Rolleston, Sir William Osler and Professor von Mueller. Later Dr. Butterfield published a paper in the *Folia Hæmatologica* confirming my belief in the diagnostic value of the cells I had seen, when they were present in abundance. He referred to my two cases, the specimens of which he had seen. The cells are better recognized by seeing them or seeing pictures of them than by any description that I can give. They are characterized mainly by having a very large, irregular, polymorphous nucleus. A good plate is to be found in Dr. Butterfield's paper. It is to be hoped that further observation will be made along these lines to determine the exact value of the presence of these cells for diagnosis.

DR. WILDER TILESTON, New Haven, Conn.: In connection with Dr. Bierring's paper there should be mentioned a clinical syndrome bearing a close resemblance to chloroma, namely, malignant disease of the adrenal gland with metastasis to the orbit and cranium, a condition which especially occurs in young children, frequently giving rise to hemorrhages in the eyelids, exophthalmos and cranial tumors. The clinical picture, with the exception of the blood, is almost exactly similar to that of chloroma. There is nothing abnormal found in the blood except possibly a secondary anemia.

DR. WALTER L. BIERRING, Des Moines, Iowa: There is a general tendency to recognize a relationship of chloroma to leukemia and other diseases of the hematopoietic system; in the condition referred to as chloroma there is a tendency to tumor formation or proliferative changes of a malignant nature which have their origin in the blood-making apparatus. It is quite possible that when the causes of these various reactive processes are more definitely understood the relationship of these different conditions will be more closely established. While chloroma usually presents a distinct clinical picture, the atypical forms that have been recognized make it difficult to class it as a distinct disease entity. All this indicates that chloroma is a general disease of the hematopoietic system. Because of the nature of the disease process the prognosis is distinctly unfavorable, and none of the usual remedial measures employed in the other diseases of the blood-making organs have proved of any virtue in connection with chloroma.

39. Pappenheim: Folia hæmatol., 1910, ix, 143.
40. Schridde: Aschoff's Lehrbuch d. path. Anat., 1909, i, 100.
41. Borst: Aschoff's Lehrbuch d. path. Anat., 1909, ii, 559.

RECONSTRUCTION OF BALL-AND-SOCKET JOINTS

PERCY WILLARD ROBERTS, M.D.
NEW YORK

Having succeeded in reconstructing a tuberculous hip-joint so as to eliminate the disease and produce a new and apparently serviceable head on the femur, I desire to make a preliminary report on the operation and submit one case, which has demonstrated the feasibility of the procedure, with comments on others still under treatment.

An astragalus removed from a paralytic foot showed such striking similarity of contour, when held in certain positions, to the head and neck of the femur, and presented so large an articular surface (see illustration) that it suggested to me the possibility of using a portion

of the bone as a graft to replace the femoral head when impaired by accident or disease.

CASE REPORT

June 18, 1912, at the City Children's Hospital, a girl of 8, who had for over two years been bedridden from tuberculous ostitis of both hips, was submitted to operation. An abscess extending half way down the thigh was present on each side and both hips were stiff. The astragalus of the right foot was removed in the usual way and placed in salt solution, while the wound was closed and a plaster dressing applied. The abscess on the left thigh was then evacuated by incision and the wound closed by suture.

When the hip-joint was opened it was found that the half-destroyed femoral head was bound securely to the acetabulum by dense adhesions. These were cut and the head was freed, turned into the wound and sawed off at the middle of the neck. An ivory pin 1 inch long and three-sixteenths in diameter, threaded its whole length, was then screwed into the stump of the neck, and after the removal of a part of the body of the astragalus the remaining portion was screwed down hard onto the cut end of the femur. Secured in this way the parts held firmly. The newly formed head was replaced in the acetabulum, the wound closed and the leg put up in a long plaster spica.

The subsequent history was without incident. After forty-eight hours the temperature remained normal, the soft tissues healed by first intention, the abscess disappeared, and at the end of ten weeks the graft was found united and the patient had about 30 degrees of voluntary motion. Disease in the opposite hip, which was not operated on, remains active.

Astragalus from a child of 14, held in position to show its resemblance to the femoral head.

OTHER CASES

Four other patients have been operated on and are still in plaster. Two of these were infected before operation, each having several sinuses discharging foul pus. While little can be expected of them, operation seemed justifiable because of their bad condition and they have progressed without pain or rise of temperature after forty-eight hours, and their general health is improved. The third case was a pathologic dislocation following acute epiphysitis with entire destruction of the head and neck, and the fourth was a patient with tuberculosis of both hips with abscesses which had not broken down. All are apparently doing well and a report on these will be made later.

Should the operation prove to be as practical as present experience indicates, its wide application to a number of conditions now more or less hopeless of relief by other forms of treatment will be apparent to those who have to deal with impaired hip-joints. Among such conditions are those cases of bilateral tuberculous hip disease in which at present the result is usually two stiff hips, rendering locomotion without crutches most difficult or impossible; pathologic dislocations in which the head and neck of the femur are destroyed; congenital dislocations in which maintenance of reduction is impossible owing to malformation of the femoral head; old fractures of the neck of the femur with non-union, and osteo-arthritis of the hip, in which men of middle age are incapacitated for work and their only hope lies in an ankylosed joint.

It would seem reasonable to assume, too, that the period of treatment of tuberculous hip-joint disease may be reduced by operation from three or more years, the time required by brace or plaster treatment, to four or five months, with the likelihood of less atrophy and deformity.

Transplantation of the astragalus may also be of service in ostitis of the shoulder.

If possible, it is, of course, desirable to obtain the astragalar graft from another patient in need of operation for deformity of the foot, as has been done in some of the cases referred to. There can be no serious objection, however, to making an autotransplantation. The observation of results in a large number of cases of astragalectomy done by various operators at the Hospital for Ruptured and Crippled, Mount Sinai, Post-Graduate and City Children's hospitals, with which I am connected, has furnished convincing proof that an astragalectomy properly done leaves a foot which is functionally almost perfect and in which the deformity is trifling.

Further results in this operation for the reconstruction of ball-and-socket joints will be published in a subsequent paper.

40 East Forty-First Street.

THE SPEECH RELATION OF CLEFT PALATE OPERATION *

GEORGE V. I. BROWN, M.D.
MILWAUKEE, WIS.

The surgery of cleft palate in the course of its evolutional progress through constantly changing but, as we believe, steadily improving technic and operative methods, has finally become established on a sufficiently firm basis to warrant the assumption that any palate fissure may be closed by a surgical operation. This progress has also brought with it a realization that merely covering the roof of the mouth by carrying tissues across the palate fissure even though union may be ever so perfectly secured is not of itself sufficient to insure good speech results. More healthful nasal and oral conditions may thus be secured. The effect of improved respiration, together with the beneficial influence of local healthfulness on general health, may always be expected and these results alone are well worth all that undertaking the operation implies without consideration of speech improvement. Beyond this, individuals requiring this treatment may be assured that they will speak more easily and even more clearly than before operation. Between these results and the perfect speech that is so desirable there is a wide division and in this intervening doubtful area may be found many widely different more or less influential factors, each of which should receive due consideration in determining both the surgical methods and prognosis.

When we remember that speech is governed by the sex, character, mental capacity, training, state of mind, nervous conditions, general bodily health and past and present development influences, it should bring a realization that only one of all these factors, that of sex, lies completely beyond the possibilities of therapeutic or surgical improvement. Even the sex influences on the sound of the voice may be surgically altered, though its improvement may be questionable. Under some conditions, exceptions must also be made with regard to character, mental capacity and prenatal developmental influ-

* Read in the Section on Stomatology of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

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ences, because these are sometimes beyond control according to our present knowledge. All the other influences become more and more susceptible to improvement as advancement in our understanding of psychopathic, neuropathic and other pathologic states increases the range of recognized opportunities in the direction of speech control. The causes of defective speech, according to Cohn, are: stammering, stuttering, nasal defects or malformations of hard and soft palates, deaf-mutism and defects of speech due to diseases of the central nervous system. Ballinger's enumeration is as follows: defects of speech of nasal origin, defects of speech of epipharyngeal and faucial origin; defects of speech of lingual origin; defects of speech of laryngeal origin; defects of speech of thoracic and abdominal origin; deaf-mutism; defects of speech due to malformations of palates, and defects of speech of central origin.

In my own work on "The Surgery of Oral Diseases and Malformations" I have grouped the foregoing classifications of defective speech causes into nervous, anatomic and mechanical influences. Radical divisions of this character, it will readily be understood, cannot arbitrarily be insisted on, because factors belonging to each one of these classes are inseparably dependent on and associated with those that might be classed in some other division. Congenital absence of the sense of hearing or defective brain development or nervous affections common to defectives, in so far as they may prevent or militate against speech, are for the greater part beyond any surgical or medical control. Certainly their control lies outside the field of oral surgical treatment except such nervous affections as may be benefited by the treatment of buccal conditions. All methods that may be helpful should be employed when indicated to assist such individuals toward the establishment of more stable conditions of the nervous system, in order that every possible assistance of this nature may be given speech function.

In undertaking the treatment of these cases, the most difficult feature often rests on the decision as to whether the condition is one favorable for improvement or due to causes that cannot be corrected. To those who have not seen large numbers of harelip and cleft palate cases, and who may therefore be unfamiliar with the frequency of the occurrence of other defects among such individuals, it may seem like a confession of ignorance for me to state that notwithstanding the unusual opportunities for such observations that many years of practice limited to this surgical field has given, I constantly find it more instead of less difficult to determine satisfactorily just how much or how little the factors, other than those which anatomic defects represent, may be influential in each particular case.

All who have had experience in the treatment of defectives of any character will readily appreciate the importance, when applied to the treatment of one form of speech defect, of the notable fact that all degrees of speech imperfection are found among such individuals even when their mouths appear to be quite perfect. A more general realization of this feature of speech consideration may be facilitated by calling attention to the wide differences of sound and pronunciation in speech among all people whether normal or otherwise. Obviously, the surgical closure of a palate fissure cannot be expected to overcome a speech defect the underlying cause of which is some factor other than those which concern the physiologic action of the parts, as influenced by the anatomic defects.

Therefore, when there is a combination of influences of this character associated with cleft palate the improvement of speech may be expected only in so far as these other imperfections, in addition to the anatomic defects, may be overcome. The influence of wrong speech habits which can be benefited only by patient systematic training after the palate fissure has been closed I have fully described in previous articles published in THE JOURNAL[1] and elsewhere, in my work on oral surgery, the surgery of oral diseases and malformations, but I call attention to this feature of the subject in order that my full appreciation of this aspect of the question may be understood since it is with other factors that the present consideration is more particularly concerned.

Preliminary considerations having thus included and recognized the significance of all factors comprehended within the wide range of influences that may make for or against improvement of speech in these cases there seems, therefore, little danger that I may be misunderstood when I state that study and experience have convinced me that in most cases the correction of defects by postoperative speech training and the rapidity of speech improvement under all circumstances will be accelerated in proportion as the results of our surgical operations in both uranoplasty and staphylorrhaphy more nearly approximate the normal in the reproduction of bone and soft tissues in the palatal region. This study includes experience in the speech-training of patients whose palates have been closed according to the methods that I employ, as well as other methods, and of patients whose palates were not fissured but who had defective development of the hard palate, although the palatal vault was perfectly covered with soft tissue and the velum apparently complete and whose speech defects were often worse than those of patients with open palate fissures. With this end in view, I have endeavored to ascertain exactly what measure of normal development might be secured by the methods of uranostaphylorrhaphy that are chiefly employed, by conducting a series of experiments on dogs during the past two years. I was enabled to do this through the courtesy of Parke, Davis & Co., who placed their laboratory for pathologic research at my disposal, and through the valuable assistance of Dr. N. S. Ferry, who is in charge of that laboratory.

Everything was accomplished in the most painless manner possible. A few minutes before the operation, each puppy was given an injection of chloretone so that when brought into the operating room, it was in a state of absolute muscular relaxation, and so profoundly insensible to nerve stimulation that it was impossible for it to suffer even the fear and discomfort which might otherwise have been incidental to the administration of ether, under the direct influence of which the operation was performed.

These experiments are still in progress but I believe that sufficient evidence has already been secured to warrant a report at this time with deductions therefrom applied to the subject of our consideration.

The recognized distinct types of operation for palate closure are as follows:

Compression by crowding together the segments of a palate divided by fissure in such a manner as to force the parts into contact, as recommended for young infants by Garretson, Brophy and others.

Turning over the flaps by reversal of the soft tissues on one side of the palate surface and attachment to the

1. THE JOURNAL A. M. A., Feb. 1, 1908, p. 342.

opposite side, according to the practice of Lane for young infants, and the late Dr. Ferguson of Chicago for persons of more advanced age.

Fracture of palate bones. The method of sawing through the palate bones from behind forward, fracturing with forceps, and wiring in such a manner as to approximate the bony fragments sufficiently to bring the soft parts together, was devised by Ferguson and earnestly advocated for many years by Mears of Philadelphia, who did so much for the advancement of oral surgery. After having become practically obsolete, the method has recently been improved by Roe.

Anterior end of flaps detached. Detachment of a flap from the anterior portion of the palatal mucoperiosteum and carrying it across the fissure, as in the Davies-Colley operation.

Mucoperiosteal flaps. Fissure closed by lowering the palatal arch and sliding the flaps across the bone surfaces in such a manner as to bring them in contact in the median line, a method chiefly due to von Langenbeck and improved and altered from time to time by many other operators.

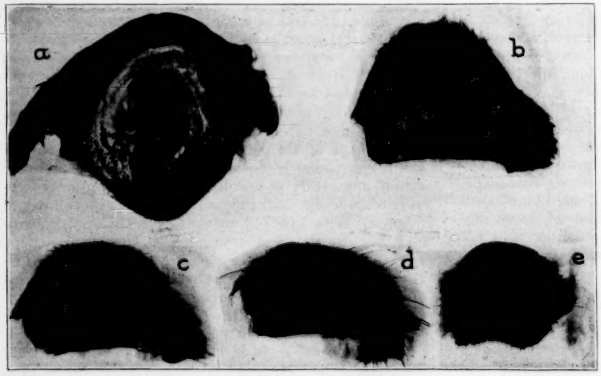

Fig. 1.—Sections from the head of a normal puppy 6 months old.

PALATE COMPRESSION

I have long had reason to believe that this method should unhesitatingly be condemned, because compression so exerted necessarily contracts the parts in such manner as to narrow the nares and crowd the erupting teeth out of place or totally destroy at least some of them. This leads not only to later disfigurement, through disarrangement of the dental arch, but also to loss of growth and development of mouth, nose and face, so that when adult life is reached the best speech is impossible, and the fullest possibility of good appearance prevented.

Unfortunately it sometimes happens that these cases, when apparently successful, and so reported, in later years prove to be more seriously damaged than the unsuccessful ones in which the parts have drawn apart at an early date, and thus, to some extent, overcome the contraction.

Numbers of children and young persons who have had palates closed in early infancy by direct compression are living examples of the truth of this statement. Deviated nasal septa, contracted nares and diseases attendant on these conditions, extending in various degrees throughout the extent of the nasal mucous membrane, affections of the middle ear, mastoiditis with associated deafness, contracted palates with teeth developing toward the central portion of the mouth, with almost hopelessly deformed dental arches and insufficient space for tongue movement in speech, fully attest the truth of this conclusion.

The evidence of the sections through the heads of puppies at 6 months old shows with absolute perfection exactly what does occur in alteration of intranasal form, when growth of the upper maxillary bones is so arrested as to interfere with the normal width across the palate, which, whether it occurs through adenoids, enlarged tonsils, mouth-breathing, the malocclusion incidental to irregular dental arches, or through forcible compression and the introduction of retaining wires in closure of cleft palate or otherwise, inevitably produces, in greater or lesser degree, the same results and the invariable chain of pathologic conditions which affect not only the local structures but general health and development as well. The sections shown in Figure 1, a, b, c, d, e, and Figure 2, a, b, c, d, e, were cut from the heads of the control pup and one of several puppies 8 weeks old which were operated on by passing wires through the maxillæ from a point above the roots of the teeth on one side above the palate and out at a corresponding point on the opposite side. These wires were secured by silver plates clamped with shot so arranged on the inside of the tissues of the cheek as to interfere as little as possible with muscular action. The palates were compressed sufficiently to force the upper teeth inside or in lingual occlusion with the lowers, so that the upper and lower jaws of these puppies were placed in about the same occlusal relation that exists with growing children whose bicuspid teeth meet the corresponding lower teeth in lingual (inside) occlusion instead of buccal (outside) or normal occlusion. Not nearly so much force in compression was used as would be necessary to close a palate fissure according to the method of this character which was formerly widely practiced on infants with cleft palate. One puppy was kept without operation as a control and all were allowed to develop until they reached the age of 6 months. This, it was estimated, would approximately correspond to the age of a child 8 years old. The puppies were then killed, the heads frozen and sections cut through the nose and upper jaws at short intervals.

In the course of this experimental work on dogs, other symptoms were noted in the puppies that were similar to those found in children with high contracted but otherwise normal palatal vaults whose upper jaws are similarly, even though more naturally constricted. The dogs operated on developed a high degree of nervousness which corresponded to the nervous condition of such children, and inasmuch as the nervousness of the dogs was apparently caused by the effect of buccal and nasal conditions, it offered a fair explanation of the clinical experience that such children almost invariably

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become less nervous after an expansion appliance has been inserted and a measure of maxillary and nasal relief thus afforded.

The almost perfect resistance of the pharyngeal and bronchial mucous membrane of healthy dogs to the action of pathogenic bacteria has been proved by experimentation; this is lost when the air passages are obstructed from any cause. The marked susceptibility to infection thus produced in these puppies was undoubtedly accountable for congestion of the lungs found in one of the experiment puppies and other evidences of disease in others. This was exactly in accordance with the frequent colds, bronchitis, and tendency to pneumonic affections that are characteristic of all mouth-breathing children.

The enlarged maxillary sinuses of the experiment puppies, when compared with the slit-like openings of the normal dog, are also in accord with the clinical evidence that individuals affected by high narrow contracted palates and nasal defects almost invariably have enlarged and (as is now becoming better understood), diseased nasal accessory sinuses also. Post-mortem bacterial examinations of such sinuses, and the frequency with which they have been found to contain pneumococci, have emphasized the pathologic importance of these findings.

Fig. 3.—A, the result of operation on a young puppy in closure of a palate fissure cut through the hard palate in imitation of the form of a congenital human cleft palate as described in the text; B, head of same puppy with the mucoperiosteum removed, showing no bone development in the region from which the bone structure had been removed.

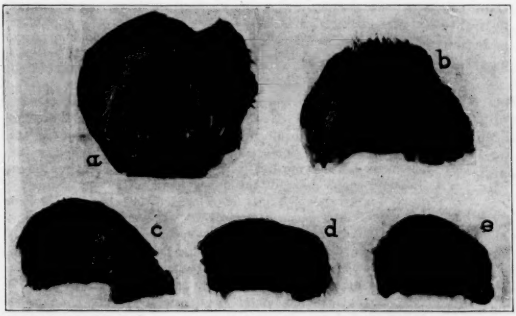

Fig. 2.—Sections from the head of a puppy 6 months old, with jaws arrested in development across the palate by wiring at 8 weeks old. All these sections show plainly the effect of restricted jaw growth in reducing the size of the nares. Section c, cut through the point at which growth was almost entirely prevented, shows almost complete nasal stenosis. Section b, marked deflection of the nasal septum, and Section a, both maxillary sinuses greatly enlarged.

FLAPS INVERTED

The second type of operation was tested by cutting sections of bone from the palates of puppies, thus converting them into cleft palates. The fissures in some of these animals were closed by making incisions along the alveolar border on one side down to the bone, raising the mucoperiosteal tissue of the palate from the external border toward the center, reversing it, sliding the border under a mucoperiosteal flap raised by separation along the border of the fissure of the opposite side and suturing the parts in this position, the purpose being to follow, as nearly as possible, the methods of Lane and Ferguson. The fissures in other puppies were closed by freeing the anterior end of the mucoperiosteal flap with a broad posterior pedicle, reversing and suturing it under a flap similarly raised on the opposite side which was left with the mucous membrane in its normal situation (Figs. 3 A and 4 A) as in the Davies-Colley operation. Due allowance must be made for the difficulties attendant on dog operations of this character, particularly the disadvantages of postoperative treatment; nevertheless, the jaws of these puppies as they were after the healing process was completed and with the soft tissue stripped to expose the bone fissure demonstrate clearly that there is no evidence whatever of bone reproduction (Figs. 3 B and 4 B). It therefore seems reasonable to conclude that this type of operation is objectionable, because through the disturbance of the natural anatomic arrangement of the tissues, occasioned by turning the periosteum upside down, bone-growth does not take place as it might if the periosteal surfaces were merely moved across and brought together in natural position. Therefore, the result of all such operations, even though successful in giving a covering to the palate, is to cause formation in that region of more or less thickened fibrous tissue. Such tissues may yield to normal expansion as growth proceeds, and thus not seriously contract the width of the palate or nose, but when developed, the part cannot have the firm, resounding properties of a bony palate, nor will it have the fixed resistance to the attachments of the muscles that will be necessary for proper speech function.

Fig. 4.—A, the result of operation on a young puppy in closure of a palate fissure cut through the hard palate in imitation of the form of a congenital human cleft palate as described in the text; B, head of same puppy with the mucoperiosteum removed, showing no bone development in the region from which the bone structure had been removed.

The importance of this finding can best be appreciated by consideration of cases, previously referred to, of defective speech without apparent palate fissure. Many examples could be cited of cases in which there was not and never had been fissure through the palate, beyond in some instances a bifid uvula, and yet these individuals had all the speech defects of patients with complete fissures through both hard and soft palates and their inability to profit by speech-training seemed to be fully as great.

Careful examination disclosed in every instance that though union of the soft tissues of both the hard and the soft palates was complete, there had been an arrested development of the palate bones which left the hard palate short, or with the outlines of a notch in the median portion, which would have been a cleft palate had it not been covered by soft tissue. Such cases are not generally recognized and not infrequently more or less long-continued treatment has been attempted in an effort to stimulate the action of the palate muscles by the use of electricity or otherwise, because the speech defect has been regarded as due to partial paralysis of these muscles. As a matter of fact, the real cause is a deficient palate bone development whereby the fixed attachments of the muscles of the velum palati at the hard palate are so altered that proper function in its lowering and raising is impossible, and for this reason the development of the soft palate as a whole is incomplete.

Operation on a number of these patients for correction of this palate condition has led to considerable improvement, but the trouble is so insidious and yet so difficult to overcome that any operation which at the outset contemplates producing a similar condition should be avoided.

OTHER DEFECTS

Other speech defects that may be considered to be directly due to postoperative imperfections, such as deformities due to injury of the premaxilla or its misplacement in operation, to nasal defects that should be avoided during harelip operations, the velum too short or too tightly drawn or so stiffened by scars after staphylorrhaphy as to be incapable of the necessary free movement, lip deformities, occasioned by imperfect operations or other causes, which affect speech, and deformities of the dental arch or other factors that antagonize correct psychologic action in such effort—all these defects, which might properly be described in detail under the title of this article if the time limitations permitted, must be postponed for future consideration.

It should be borne in mind, however, that all of them may be benefited by corrective operative treatment, but their prevention should be the dominating thought in determining operative methods. This can only be accomplished by avoiding all unnecessarily forcible treatment in early infancy, and in the selection of the type of operation to be performed, it should be remembered that every effort must be made to retain all tissues in as nearly their normal situation and relation as may be compatible with the requirements of the conditions governing the closure of the palate fissure. This necessarily implies systematic treatment from the very earliest period of infancy if possible. Each operative procedure should lead step by step to the next in order that each may be more easily and perfectly accomplished.

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ABSTRACT OF DISCUSSION

DR. M. I. SCHAMBERG, New York: For a long period of time the main question in connection with palate work was to be able to close the palate, and everyone worked with that end in view, and often disregarded the ultimate speech results. I feel confident that this helpful piece of research will be looked to as one of the greatest steps in advance.

DR. M. H. FLETCHER, Cincinnati: I would like to ask Dr. Brown how much training the patient may need in learning to speak? How perfectly may these cases be restored, and do the patients really learn to speak perfectly? I suppose in most of these operations the patients have to be drilled in learning to speak. Assuming that an operation has been performed on a child of 10 years, does the patient learn to use the muscles and produce perfect sounds as we know them?

DR. G. V. I. BROWN, Milwaukee: Dr. Fletcher's question covers the whole field of speech-training, and the real basic purpose of the work as we undertake it. I generally prefer to get the palate closed before opportunity has been given to acquire bad habits of speech; if possible, before any adverse changes have occurred in the muscles, the nasal accessory sinuses or the face. When such persons have reached a sufficiently advanced age, wrong speech sounds are almost impossible to overcome. Most cleft-palate patients know the nature of their defects only through other people. They are not directly conscious of their abnormal voice sounds. I have met this difficulty by taking phonographic records of the speech in such cases and when the graphophone spoke back to them so that they could hear their own voices in that way, the effect was the same as another individual speaking. They then recognized the defective sounds. Some of the patients whose palates I have closed in infancy, and who are now grown up, have speech that is not entirely satisfactory—not nearly so much so as some who have been operated on later in life. Some people pick up sounds quickly; they seem to have a natural activity in the use of the tongue, as some people have of the fingers, and learn very readily. I have known people fully developed, whose names I could not understand as pronounced by them when they first came, and in two years have met these people after operation, and they spoke very distinctly. I would not leave the impression that one is not cognizant of their defects of speech, but these people go out into society, take their natural parts in conversation and have interests in life that were not possible for them before. In time they become useful people. Then again there are others who do not seem to improve at all. It is impossible to avoid the speech-training feature in these cases, because the success of palate work really depends on that result. I think, however, that the speech-training idea has been exaggerated. In other words the speech of these patients has probably been bettered in proportion to the degree of approximation of normal anatomic conditions without which no amount of training could be effective. The purpose of the experiments on dogs was to demonstrate as nearly as possible just what the results of uranostaphylorrhaphy really are when performed according to the different methods, and to determine which one more nearly approximates natural conditions. The patients that give me the most trouble are those who have never had cleft palate and yet have many speech defects that are the same as those indicating that deformity. In such a case, under an anesthetic we examine the nose, throat, palate and pharynx very carefully and try to determine exactly what the physical defects are; we also endeavor to ascertain if the speech imperfection be due to some central condition governing the control of the parts or otherwise. Naturally, in all cases the success of treatment must depend on these two conditions.

Mental Hygiene: Its Importance.—Jan. 1, 1910, there were 187,454 insane persons in institutions in the United States, a number which exceeds the combined enlisted strength of the United States Army, United States Navy, and United States Marine Corps; and it also exceeds the number of students enrolled in all colleges and universities in the U. S.

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PELLAGRA

OBSERVATIONS ON SOME OF ITS NERVOUS MANIFESTATIONS *

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The incidence of inclination and the opportunity to observe have led me to depart from the beaten path of clinical routine and attempt to consider superficially some of the neurologic aspects of that more or less widely prevailing condition, known as pellagra—a disease old in itself but comparatively little known in the United States until within recent years, prevailing widely in the Southern states and constantly on the increase. Isolated cases are now being found more or less frequently in the North. Every state in New England, with the exception of New Hampshire, has reported two or three cases. New York and New Jersey have each reported a few, and Pennsylvania a larger number. There are doubtless a few cases not reported at all, because the diagnosis is not sufficiently clear. In 1907, while on a brief trip south I was shown a few undoubted cases, and in October, 1911, a further opportunity for more critical observation was furnished by an automobile trip from New York to Jacksonville, passing through the states of Virginia, North and South Carolina, Georgia and Florida. Isolated cases were looked up, and diagnoses and observations were made by my meager knowledge and experience, with valuable aid from some of the physicians connected with the Rockefeller Commission.

The disease is, perhaps, of equal interest to the gastro-enterologist, the dermatologist and the neurologist, although, in general, it may be briefly defined as a trophoneurosis. The types vary in races and in those situated far apart. In some cases, the gastro-intestinal symptoms predominate, possibly in those whose digestion always has been weak. In persons of an unstable nervous system, the nervous symptoms will predominate. One authority goes so far as to say that a majority of the people of the South are suffering from one form or another of corn-bread poisoning, as he terms it, and that numberless persons with indigestion who eventually recover and hundreds of persons with so-called auto-intoxication in reality have but manifestations of corn-bread poisoning.

It is difficult to group the psychic symptoms under any of the usual classifications of insanity, as every new case brings a new point of view. Most of the confirmed cases of pellagra are to be found in insane asylums, and it is to the men in charge of these institutions that we are indebted for the greater part of our knowledge of the mental symptoms. The exact relation of insanity to pellagra should attract further study and observation as to whether the majority of patients were first insane and later pellagrinous, or vice versa. An important point in favor of the conclusion that many insane persons have later become pellagrous is to be found in the character of the skin lesions, many of which show face, arm and neck lesions belonging to the early rather than to the late stages of the disease. Many pellagrins seem quite sane; others show a mental depression and vague unrest, with a sense of impending disaster. There is scarcely any of the long train of neurologic symptoms and stigmata that may not be found in pellagra—neurasthenic fancies, paresthesias, lightning pains, resembling those of tabes, tremors of the hands and tongue and of the facial muscles, resembling disseminated sclerosis, the Romberg symptom, weakness in the limbs, exaggerated reflexes, erratic movements due to muscular spasm, convulsions, etc.

The typical cases commence with a disordered digestion or a stomatitis, diarrhea and mental disturbances, these symptoms occurring each year, having a remission in the summer and getting worse in the fall, the nervous symptoms increasing in severity with each attack. There are patients in whom perfect health has been the rule, with perhaps an attack of malaria, who apparently recover; later, nervous symptoms begin to appear. The patient gets bewildered, easily dazed, melancholy, makes mistakes in business, and may or may not have maniacal attacks, slow speech, unsteady gait, untidy habits. Six months afterward, the erythema appears on the exposed parts of the body, resembling sunburn, usually symmetrical in position, shape and outline, often accompanied with occipital headache, anorexia, pains in back and neck, dryness and burning in mouth and throat. Delusions and hallucinations are rare. The vertigo of pellagra is a symptom made much of by Italian observers. Lapses of memory similar to what is known as psychic epilepsy may occur. Refusal of food and suicidal tendencies may occur; tremors of the upper extremities are common, while incoordination is rare. The gait is usually of a spastic-paralytic type, rarely ataxic, indicating a lateral tract rather than a posterior column involvment. The skin sensibility is irregular; sometimes there is an increased sensibility to electric currents. The reaction of degeneration is rarely found. The thermal and tactile senses are sometimes lacking. The investigation of sensation is very unsatisfactory, owing to the patient's altered condition of intellect and the unreliable character of his replies to questions. Skin reflexes are usually normal. Patellar reflexes increase, but later in the disease they may be lost.

The vasomotor disturbances consist of a dilatation of the veins, with sometimes an edema. This motley array of nervous symptoms and their chaotic arrangement would seem to make the diagnosis a difficult one for even the experienced alienist or neurologist. The coexistence, however, of oral, gastric and intestinal irritation, diarrhea, and the later development of the characteristic erythema confirms the diagnosis. The whole mental and neurologic picture is indicative of a toxemia, with a subsequent degenerative change in cells of the central nervous system, notably the cortex cerebri. The most definite changes in the spinal cord would point to an involvement of the lateral tract and cross pyramidal tracts. In general, the nervous symptoms most clearly resemble a neurasthenia interspersed with periods of excitement and delirium. Some cases, with mental defect, slurring speech, tremor of the facial muscles and of the tongue, suggest a general paresis. Remissions and relapses are frequent. Heredity seems to play no part in the etiology.

In Italy, the disease is said to be confined to the lower classes, poverty and pellagra being interchangeable terms. In this country, all classes seem to be affected alike. Usually the victims are robust and well nourished before becoming affected. It is believed, however, that mental stress, the strain of our more or less strenuous life, undue worry over trifles, misfortune of

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sufficient magnitude to upset the nervous system, bringing about a lowered resistance, may be partially responsible for the disease. There was a definite history of corn products having been used for food in most of the cases which I observed. It is interesting to note, in addition to the corn-meal theory of causation, that many patients with hookworm disease have later developed pellagra. To solve the relationship between the two should be an interesting study.

In the few isolated cases which I observed in the Northern states, one particularly at Ossining, New York, in 1908, another at Passaic, New Jersey, last year, and still another on Long Island, the early part of this year, there was quite a decided difference in appearance from those cases observed in the South. These patients had all originally lived in the Southern states, with a corn-food history, but had discontinued it to some extent on coming north. All showed the symmetrical patches of erythema, but in a more or less dried-up condition, and without the history of periodic occurrence. The nervous symptoms had taken on a different hue; hope had taken the place of fear, and renewed energy the place of apathetic indifference. Whether this change in the character of the nervous symptoms was purely psychic or due to the different diet or to climatic changes is problematical. It would be interesting in the future for physicians coming in contact with cases of pellagra in the Northern states to note whether patients had formerly resided where pellagra was prevalent, or whether they had been resident natives of the one locality.

Corn-food products as an etiologic factor are worthy of investigation, even in the North. For the past two years I have made observations along this line, and am firmly convinced that the spoiled-corn theory is of sufficient interest to stimulate further observation along that line. Throughout the country at large, particularly in the North, more and more corn is being raised each year, much of it for ensilage purposes. It is not uncommon for seed corn to be in storage for weeks before being planted, and in a particularly wet season, or if not stored in a dry place, to overheat, and even commence to grow, thus unfitting it for seed. Corn of this kind is often ground up and used for food for both man and cattle, and, occasionally, fed to poultry without being ground. Although I have never been able to trace any direct bad results to the use of such corn as food for human beings, I have in several instances seen flocks of chickens, those eating the whole grain, affected with a strange malady, with which the farmer was unfamiliar, the symptoms being largely a staggering gait and a refusal to take food and drink, the fowl remaining in seclusion until death claimed it.

No claim is made that these studies are at all scientific; they are of a very superficial character, and my only object in offering them as a contribution is to stimulate further studies and observations, especially in the Northern states, where isolated cases are appearing from time to time. One should be on the alert for it in all out-patient clinics, and even in private practice. It is well to remember that there is not necessarily an erythema in the early stages. Students in the London School for Tropical Medicine are taught to make a diagnosis of pellagra without an erythema. Prevailing conditions point to an increase in the number of cases as time goes on, and we should fit ourselves to do our part toward the elucidation of a comparatively new and vastly important pathologic condition.

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ABSTRACT OF DISCUSSION

DR. PAUL V. ANDERSON, Richmond, Va.: There is no mental classification which exactly fits pellagra. One of my patients was maniacal; almost all of the patients are depressed. Apprehension is a marked feature in almost all cases; the patients fear some impending danger. There is frequently in cases of pellagra a history of ill health for a number of years. Quite a number of my cases were diagnosed as neurasthenia three or more years before marked mental symptoms developed. Two or three patients were also treated for rheumatism. The course of the disease in most cases has been practically three years. The gastro-intestinal symptoms develop first and, although diarrhea is always present at some time during the trouble, it is not always constant, and, at times, there is constipation or a constipation alternating with a diarrhea. In the first summer, there may be only a slight erythema on the exposed surfaces. Especially noticeable is the fact that as the erythema disappears and as the parts scale, there is left a smooth, purplish and glistening surface. A slight diarrhea and more or less emaciation are present in addition to the erythema. Apparently the patient recovers, but there is a recurrence in the second summer; the patient may again apparently recover, but in the third summer, as a rule, the mental and nervous symptoms develop, and at this period many patients die. Death frequently comes slowly, however. The patients become markedly emaciated; they totter about, with feet spread widely apart, and with ataxic gait. Some complain of agonizing pains in the legs and back and frequently just before death there is marked opisthotonos. Dr. Tucker, of Richmond, Va., in a report of eighty-eight non-institutional cases, has well brought out the neurologic points of this disease.

DR. G. H. MOODY, San Antonio, Texas: Practically all the patients are anemic, and all are neurasthenic or psychasthenic. I think that in all cases the nervous and mental symptoms will show up rather early, unless the case improves. They are frequently the first symptoms present for several weeks. I have seen patients recover without developing more mental symptoms than some little anxiety and apprehensiveness, such as has been described. The anxiety characteristic is so constant as almost to constitute an anxiety psychosis. The prognosis in these cases is better than was formerly believed. Authentic reports of 90 per cent. mortality have been made, but these were from pauper cases which naturally could not have the best attention in all respects. Good attention, good nursing, rest and proper nutrition and hygiene are very important in the treatment of these cases. Drug medication is of questionable importance. Figuring on the proposition of a protozoan disease, a Wassermann was made in a number of cases with negative findings. Salvarsan was given in half a dozen cases; each improved at least temporarily, and three of the patients apparently recovered. Many of the improved patients do not seem to get back entirely to normal; they remain somewhat neurasthenic and somewhat below normal in nervous and mental stamina and in self-reliance. I believe that pellagra occurs more frequently in neurotic individuals, and for that reason I do not know how much of the neurotic tendency might have been present had there been no development of pellagra. The medicinal treatment of pellagra outside of that purely symptomatic is sodium cacodylate.

DR. B. R. TUCKER, Richmond, Va.: I do not think that pellagra is primarily a nervous disease. I have investigated several hundred non-institutional cases, with the hope that it possibly might be found to be primarily a nervous disease. Lombroso spent his life in trying to prove that corn was the cause of pellagra, and disseminated a view which has taken hold all over Europe and this country until recently. In a very careful study, covering 105 different points, of eighty-eight cases of which I have complete statistics, I find that nine of the patients did not like corn; the question covered not only corn-bread, but corn-cakes, and even such things as corn-syrups, corn-whisky and any form in which corn is taken. Dr. Hill has said that if spoiled corn was the cause of pellagra, the Southern army would have been annihilated during the Civil War without any lead. Most Southerners are corn-eaters; in the North corn is eaten in the form of corn-flakes,

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corn-syrup and corn-meal and possibly in other ways. There is no such thing as pellagra from corn poison. In the investigation of these early cases, I never saw a case that occurred in a person who did not seem to have been previously debilitated. The early diagnosis of pellagra is rather difficult. Any person may be nervous and have diarrhea; if you are going to rest on those two symptoms you certainly are making an astute diagnosis. There are two forms of the disease, the fulminating form, which goes on to death in two or three months, and the chronic form, which may recur sometimes for years. It has been stated that the second year is worse than the first, and the third worse than the second, both from the mental standpoint and the standpoint of cutaneous and gastro-intestinal symptoms; I do not believe that this is so. Many cases are improved the second year. I have found that some of my patients had had unrecognized pellagra for five or six years, but most were in the first year of the disease, which started as a gastro-intestinal upset, if a very severe stomatitis be included, in over 90 per cent. of the cases. The sequence of symptoms was, as a rule, gastro-intestinal, cutaneous and then nervous and mental. The nervous and mental symptoms formed no regular symptom-complex; they were simply the individual reaction of the patient to an infection or a toxemia. I agree with Dr. Spiller, who in his examination of the cord in some cases of Dr. Anderson, stated that he thought from the appearance of the cord that pellagra was probably of infectious origin. From the early clinical history of cases, which begin with stomatitis, gastritis and usually diarrhea (and these are often forgotten unless one goes very carefully into the history), and which then show cutaneous symptoms, and at the same time or later manifest nervous and mental symptoms, the disease looks like an infection with the cutaneous manifestations as trophic disturbances, and the mental and nervous manifestations as toxic disturbances of a gastro-intestinal infection.

DR. TOM A. WILLIAMS, Washington, D. C.: Pellagra is not a nervous disease. I should not regard the skin lesions as trophic; I consider them as toxic, just as eczema is toxic. What we really have here is an active agent in the nature of a toxin, producing these symptoms. A very important symptom, sialorrhea, is often overlooked, but when taken into consideration, together with violent acute diarrhea, lasting several weeks sometimes, one does not require the pellagra to make the diagnosis, more especially when the gastro-intestinal symptoms are accompanied by some signs of the mental inhibition which is characteristic in some stages of the disease. I do not agree with the statement that the disease does not conform, mentally speaking, to any well-known clinical picture. The disease is typical; it might be the prototype of a well-known picture of mental disease, namely, the *confusion mentale* of Chaslin, which is the mental syndrome shown in pellagra. It is the toxic psychosis. The type of the disease is a confusion of ideas and an inability to react in the usual way. The anxiety state may be in some cases secondary to the feeling that one is severely ill and about to lose one's mind. These conditions of confusional insanity may be well seen in the mental disturbances resulting from alcohol. The confusional state may be maniacal depressive, or it may be subject to definite delirium with more or less systematized delusion, varying with the time and degree of severity of the case.

DR. D. E. HOAG, New York: The gait in the few cases which I saw seemed to be of a spastic type. I do not think any of them were ataxic. Whether that gait varies from time to time, whether it is spastic this week and ataxic a few months later, I do not know. My object in bringing a paper like this before a Section of this kind was to see if there was anything in the early symptomatology of the disease, so far as nervous symptoms are concerned, that would fit in with any of our neurologic syndromes. If there is ever going to be a possible serum that may be used, it would have to be used in the early stages. Consequently, it would be valuable to recognize the symptoms in their very incipiency.

I disagree with the observation that pellagra always occurs in the anemic and weak, for I inferred from the answers to my inquiries that it often did occur in the robust and strong.

A CASE OF TRAUMATIC PSYCHOSIS ASSOCIATED WITH AN OLD DEPRESSED FRACTURE OF THE SKULL, FRONTAL REGION; OPERATION; RECOVERY *

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AND
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We deem this case of sufficient interest to report for the following reasons: It was a case of a traumatic psychosis which had already been treated for a year and four months in a private hospital for the insane, without improvement, before it was seen by us. There was a history of an old compound fracture of the skull over the right inferior frontal region, sustained about eleven years prior to the onset of the psychosis. A surgical operation revealed an area of depression of the inner table of the skull, at the site of the old injury, corresponding to the right middle and inferior frontal convolutions. And, lastly, after the operation for the removal of the depressed bone there was a rapid recovery from all symptoms and a restoration of the patient to his family and his business. The operation was performed in January, 1911, so that sufficient length of time has elapsed to enable us to look on the recovery as permanent.

REPORT OF CASE

History.—The patient was a man, aged 50, single, born in New York. He was the fourth of twelve children; his birth was at full term and unattended with difficulty, but as an infant he was "sickly." No mental or neuropathic heredity was ascertained. From youth until the age of 40 the patient drank to excess. He contracted gonorrhea, but denied luetic infection. From the age of 10 he had earned his own living and assisted in the support of his family. In the year 1898, a private business venture not succeeding, he became worried, drank more heavily, and one evening, while under the influence of liquor, shot himself in the head with a 32-caliber revolver. He was not rendered unconscious, and was able to walk several blocks alone to a hospital. The hospital records merely note the removal of a bullet for compound fracture of the skull and the discharge of the patient after dressings had been applied. No anesthetic was taken for the extraction of the bullet, and no ill effects followed. The patient continued at work and there is no record of a psychosis at this time. He also continued to drink some after this, but less than formerly, until 1902. Since 1902 he has been a total abstainer.

For eight months, in 1898 and 1899, he had gleet, and in 1901 a mild attack of gout in the left foot. Sexual impotence had existed since some time prior to the suicidal attempt.

Onset of Symptoms.—Mental and nervous symptoms began in July, 1909. This was eleven years after the head injury and seven years after the patient had stopped drinking. The symptoms were of gradual onset and development. At first there were impaired digestion, a feeling of soreness all over, cold sweats, pains in the head and insomnia. Then supervened a loss of usual self-confidence and capacity for work, followed by a fear of being alone and other anxious fears. When alone he had impulses to jump from the window and a general panicky feeling. He lost 40 pounds in weight in six weeks. All attempts to do work only increased his symptoms and developed pains in the back and a feeling of oppression in the chest. At times he would weep and laugh hysterically. There was hardly a sustained or true melancholia, but more or less depression undoubtedly existed.

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Hospital Treatment.—In September, 1909, or two months after the head pains and other symptoms began, believing he was insane and fearing that he might again attempt suicide, he went of his own accord to a private hospital for the insane and remained there as a voluntary patient. In this asylum, he was much more comfortable. The records there have not been made accessible to us, but the patient said that one night the head pains were so severe he thought he was going to die. After remaining in the hospital for a time, and feeling better, he made several visits to his home. He found, however, that even a day's visit home developed his symptoms, both physical and mental, so unbearably, that he invariably hurried back to the hospital before the visit was completed. His longest visit home was less than a week. This was in December, 1909, three months after his admission. All of his symptoms had improved at the hospital, he said, but they returned with double force at home. His pains and oppressive feelings were greater at home and his fears intensified. The symptoms improved again as soon as he entered the asylum portals, all except his feelings of incapacity and inadequacy. This experience was duplicated at every visit. Thoughts of work would throw him into a panic. His family and friends could not understand his condition; and as his general bodily health seemed to be excellent, they repeatedly urged him to come out, and told him that his illness was purely imaginary. Shortly after his week's visit home in December, 1909, the head pains, which had been for five months occasional only, became more constant. They seemed to radiate upward and backward from the old injury. Also a sort of hissing sound in the right ear, which had existed since the injury (from concussion?) was more noticeable. He continued idly in the hospital for over a year, however, before he came to consult one of us (Atwood), in December, 1910.

Examination.—His weight then was 235 pounds; height, 5 feet, 7 inches. On examination there was a slight scar with depression of bone over the inferior frontal region well to the right. The cranial nerves were free except that there was slightly diminished hearing, right side. There were no objective neurologic symptoms; no paralysis, convulsions or anesthesia; no contraction of visual fields. Arteries were normal. There was a small umbilical hernia; also a small hydrocele. The heart's action was irregular (from smoking?). The patient had the habit of yawning and yawned frequently while in the office. A Wassermann-Noguchi test turned out to be negative. Mentally some delay and fatigability in the reactions existed, with moderate depression and at the same time a tendency to *Witzelsucht*. The symptoms previously mentioned were described by the patient clearly and in detail. He wanted to know, himself, whether there could be a physical basis for them in the old head injury. The head pains which he had had for fourteen months, at first occasionally, and for a year or longer more persistently, were described, as stated, as radiating especially upward and backward from the site of this injury. When the examination was completed, the patient decided that he would not remain in town with his family, even for lunch. He hastily said that he was not opposed to an operation; then hurried back to the asylum, fearing an accession of symptoms. Careful analysis of the urine and feces showed an absence of auto-infection factors.

After consultation with Dr. Taylor, an operation was decided on as offering a possible means of relief, prolonged hospital treatment having failed to produce any improvement. And while the private hospital staff strongly advised against operation, the patient himself said that there was something wrong inside his head and insisted on exploratory operation, inasmuch as his mind would never be settled until he knew definitely. Operation was performed by Dr. Taylor at the New York Hospital in January, 1911.

Postoperative History.—Since the operation, the patient has been free from pains, depression, psychic fears, feelings of incapacity, etc. His mental reactions soon became more prompt and there was soon less fatigability. The hissing in the ear disappeared gradually. Sexual power has returned. Patient was kept under occasional observation for several months and his general health looked after. He soon expressed a desire to get back to work and secured his old position as a buyer ten weeks after the operation. Later he was given an interest in his firm.

That portion of the cortex involved in the old injury was in a so-called silent area of the brain, the middle and inferior frontal convolutions of the right side. There was apparently some softening of the brain tissue where compressed but no change in color or presence of scar tissue was discovered.

REPORT BY DR. TAYLOR

An osteoplastic flap, with beveled edges, involving the temporal ridge and outer part of the right frontal bone, and the anterior part of the squamous portion of the temporal bone, was turned down with the base pointing obliquely toward the zygoma. On the inner surface of this flap, just beneath the bullet wound in the outer table, was a circular depression of bone about 2 cm. in diameter and projecting toward the brain about 0.5 cm. The area of brain just beneath this depressed inner table felt distinctly softer than that which surrounded it, but when the dura was opened the brain was of normal color. Aspiration showed that no subcortical cyst was present.

The dura was closed with catgut. The bone flap was laid back in place; the muscle and fascia were sutured with chromic gut and the skin was closed with silk. No drainage was used.

Convalescence was uneventful. The wound healed by primary union. After a year's time the scar was scarcely visible.

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ABSTRACT OF DISCUSSION

DR. L. PIERCE CLARK, New York: If one were confronted with the symptoms of this case, independent of the history of injury, one would at once place it in the category of anxiety and fear neuroses. I am not certain that the two elements, the brain injury and the neurotic symptoms, are associated even here. The main point is to recognize that the structural disease has been a provoking or determining agent and as such should be removed. Proper weight should be apportioned to both sides of the question. An organic and functional disease in one and the same case may coexist and yet be unrelated in causation to one association.

DR. TOM A. WILLIAMS, Washington, D. C.: One of the most potent factors in the induction of psychogenic abnormal reactions is physical disease. This case of Drs. Atwood and Taylor is a very clear illustration of the obtunding of the cerebral functions by injury, predisposing the patient to whatever psychopathic factors there were in his environment and to the manifestation of morbid reactions which were in fact psychogenic.

Another factor is that recently alluded to by Dr. Angell. Patients in the condition of toxicosis are prone to morbid psychic reactions, and the possibility of recurrence in psychogenic cases is often due to the physical state. I am not reactionary in this respect, because no one is more alive to the importance of psychogenic reactions than I am; but I would like to protest against the extreme view of immediately concluding that every psychogenic symptom must be attacked by analytic procedure until one has exhausted the physical factors, which are easier to remedy.

DR. ALBERT E. STERNE, Indianapolis: In any case in which a definite injury has been sustained, it is justifiable to investigate the site of injury. Conditions frequently arise in which an injury has been superimposed on a known psychogenic state. As I understand it, the injury in this case was caused by a bullet wound self-inflicted; prior to the injury there must have been some element of a psychopathic character, not necessarily that the man was insane, but that he was not of sound mind. There are other classes of cases which must be taken into consideration in an analysis of this kind. That this man carried a strong autosuggestive element through

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the years intervening between injury and operation with the knowledge that he had tried to injure himself, and that he had inflicted damage, and that that alone could produce psychogenic impulses without anything else must also be admitted; that the removal of that chief element to which his introspective ideas had been turned through all these years, through operative measures, would be followed by relief, especially when no organic disease was found at operation, and where no cortical cyst existed, should not be cause for surprise. I usually puncture the lateral ventricle, especially where there is any evidence of tinnitus in the ear. The effect of the operation and the momentary drainage would undoubtedly be followed by a good psychic influence. Yet there are other cases of traumatic type in which this element is not so much in play. A man is injured; the question of a damage suit does not arise, the complaint of constant mental trouble and notably of headache is shown, and the question arises whether or not operation is advisable or justifiable. In such cases a careful analysis should be made, the serologic findings of the spinal fluid should be carefully gone into and the urine investigated. Not infrequently we find in those cases in which there has been head injury and in which the question of momentum is more important than the question of impact; the question of body weight in falling is of importance, and the so-called compression syndrome has followed, that the patients are not improved by operation because secondary cellular changes have occurred which cannot be benefited by operation. But in cases in which the psychic influence of the operation is important, and in which oftentimes there are psychic manifestations such as this case showed, benefit undoubtedly will be derived from the operation itself. I refer altogether to conditions arising remotely to injury and not to those immediately following traumatism. In the latter cases, I advocate careful investigation as to the extent of damage at the time of injury, if possible.

DR. S. GROVER BURNETT, Kansas City, Mo.: Dr. Sterne refers to the patient's mental state prior to the injury.

I recently operated on a man who had been hit on the head with the blunt end of a scythe, causing a depressed, linear fracture of the skull. At the time I saw him he had been in an asylum for a year and had returned home, receiving no special care. His mental symptoms were those of a melancholy depression without the sadness. He had a profound loss of memory for language expression, both spoken and written. He presented no special physical symptoms except those referring to his writing and performing certain intellectual movements with the opposite foot; he had lost the memories for certain intellectual movements of the right foot. He could write from dictation and could copy, but he could not write of his own accord, so far as forming thought and putting it on paper was concerned. He had lost, in part, the memories of the mechanical expression essential to externalize his own thought in language spoken. He had lost the memories for expressing his thoughts in writing as well as the memories for all facial expressions of emotions, including the natural smile.

Dr. Mills has recently located the cortical center of the mechanical expression of the emotions in the right pre-rolandic area. In my case the trauma is in the left pre-rolandic area, in the posterior part of the first and second frontal convolutions of a right handed man whose difficulty was in arousing the educational memories necessary to put the muscles of expression into functional activity.

At the seat of the lesion we found a distinct depression. On opening the skull the bone formation was seen to be thin in the fracture line, but a thick depression on each side of the fracture line remained. Nature having absorbed the osseous substance in the direct line of fracture. The membranes were found to be massed and adherent; scar tissue had formed over the pre-rolandic area, over the posterior portion of the superior frontal and down onto the middle frontal convolution. The brain was pale and pulseless. After the adhesions were broken up the pulsation returned. There was some hemiplegia after the operation, but it soon disappeared. The patient is still in the sanatorium, but he has recovered his memory for smiles; the blank putty-like, expressionless condition of the face has disappeared. He has recovered from the incomplete loss of memories for externalizing speech and the complete loss of memories for externalizing writing of his own composition. This man now talks well, smiles well and thinks with less effort; instead of saying "I cannot think," as was formerly the case, he thinks slowly, but methodically and with reasonable ease.

DR. CHARLES E. ATWOOD, New York: Our patient was making $5,000 a year as a buyer. He had not been insane at the time of his suicidal attempt, so far as I could ascertain. He was in active business at the time, but was drinking more than customarily. Immediately after learning that some private business matter had gone awry and being unnerved by the liquor, he attempted suicide. His attempt was apparently abortive; he did not fall to the ground; he was not unconscious; he walked to the hospital two blocks away for the removal of the bullet. There is no neuropathic history in his family on either side of the house. The mental symptoms for which the operation was done came on eleven years after the injury and seven years after he had stopped drinking. There was no toxic condition of the system that could be ascertained by the ordinary tests in common use. The effect of the operation itself we hoped would be beneficial, even if we found nothing. We tried to make as much of an impression in a suggestive way as we could as to the value of the operation. We deemed that a legitimate procedure. The responsibility of operation rested on Dr. Taylor and myself. We were opposed by the hospital authorities and the family thought the patient had nothing the matter with him. But in view of the fact that there undoubtedly were associated symptoms of psychic origin, we thought that these would be benefited by the suggestion of the operation and the subsequent suggestive treatment. The man had been in a lunatic asylum for a year and four months, and was content to remain there. When he went out for a day he hurried back. He was of no use to the community and his family was suffering. The operation brought about an immediate change. He never went back to the institution; he went directly home from the hospital and has remained there ever since.

DR. ALFRED S. TAYLOR, New York: I should like to know why Dr. Sterne aspirates the lateral ventricle in every case in which the head is opened. In our case, the area of brain that lay immediately under the depressed bone was distinctly soft to the palpating finger. There was no evidence of change to the visual examination. I had an idea that we would find a cyst underneath that softened area, but that proved not to be the case. There was no evidence of increased intracranial pressure, and therefore it did not seem to me that an aspiration of the ventricle was desirable. I did not think we would get anything from it, considering the origin of the case and the fact that there had been no symptoms referred to ventricular distention.

It is desirable to do osteoplastic operations in this type of cases. The inner surface of the bone can be shaped very readily and the bone flap laid back so as to give proper protection to the membranes and brain substance itself. It seems to me somewhat of an error to remove the bone completely from depressions of this type and dispose of it, because so frequently adhesions between the membrane and the overlying soft tissues follow, which lead to further disturbances of one type or another.

Eugenics.—Eugenics broadly has to do with all measures that make for the improvement of conditions affecting the life of human beings. Race culture, the application of the laws of sanitation to the housing of the people, clean streets, destruction of disease-carrying insects, suppression of dust nuisances, the supply of pure water, clean milk and wholesome food, the protection of workers from the effects of dangerous callings, the securing proper hours of labor for children and women, the limitation of preventable diseases, notification, quarantine and segregation.—Harvey in *Journal of the Medical Society of New Jersey.*

FRACTURE OF THE TUBEROSITY OF THE ISCHIUM DUE TO MUSCULAR ACTION

JOHN M. BERRY, M.D., ALBANY, N. Y.

Fracture of the tuberosity of the ischium is comparatively rare. The only mention made of it by Scudder in the latest edition of his work is the statement that it is extremely rare. Stimpson mentions six cases collected by Malgaigne. Cotton in his recent book states he has no doubt that it may occur, and he has seen a number of cases in which that diagnosis had been made, but none in which it was justified.

History.—The patient, an Italian aged 23, three years before I saw him, while running in a race "felt something crack" in his left buttock, and fell forward to the ground. He was able to get up and walk, but there was severe pain and soreness in the left buttock. The acute symptoms gradually subsided, but pain, soreness and weakness persisted. The condition at last became so annoying that he decided to seek relief.

Examination.—Three years after the injury, I found the patient to be healthy, well-nourished and muscular. He complained that he could not sit on a hard chair with comfort on account of soreness in the left buttock; also that there was

Radiograph showing the detached fragment of the tuberosity of the ischium. A stereoscopic view showed that the upper end of the fragment was close to and behind the lesser trochanter of the femur.

pain in the same situation when he attempted to bend forward; and that, while he was standing in certain positions, movements of the left leg caused pain and an audible grating. The left buttock appeared to be very slightly larger than the right. Just to the outer side and below the normal position of the tuberosity of the ischium a hard mass, apparently 4 or 5 cm. in length and of indefinite width and thickness, situated deep in the tissues, could be made to move under the fingers. Movements of the mass caused the same pain of which the patient complained. A stereoscopic radiogram was taken (see illustration), which showed that the mass was a detached fragment of the tuberosity of the ischium that had been displaced outward, downward and somewhat backward. The displacement was caused by the pull of the "hamstring" muscles which arise from that portion of the tuberosity of the ischium, and undoubtedly the fragment was detached by the strong action of these muscles while the patient was running.

Operation and Result.—The patient was given a general anesthetic, and the fragment removed through an incision over it and parallel to the long axis of the leg. He made an uneventful recovery. The patient was last seen one month after the operation. There still remained a slight soreness in the left buttock, but otherwise the condition was satisfactory.

180 Washington Avenue.

Special Article

THE CASE FOR PASTEURIZATION *

EDWIN O. JORDAN, PH.D.
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Few practical sanitary questions have aroused so lively and even intense feeling as the pasteurization of milk. Pasteurization has been called a "makeshift" and a "mere makeshift"; the secretary of the Illinois State Board of Health has referred to it as "an unreliable remedy for an uncertain danger." It is declared to be "an incentive to uncleanliness," to "encourage slovenliness" on the part of the producer and milk-dealer and to postpone indefinitely the time when only "clean, raw milk" shall be marketed.

On the other side there are equally enthusiastic advocates. The controversy over the merits of pasteurization has now been going on for some years and there are reasons why it seems desirable at present to summarize the evidence accumulated for and against the pasteurizing process.

PASTEURIZATION

Like many similar terms, the name "pasteurization" has been loosely applied. This is in part due to the early use of the term by scientific writers for exposure to temperatures below the boiling point without exact specification of the temperature used and the time of exposure. Confusion was at first unavoidable since exact data were not available. Through the work of T. Smith,[1] Russell and Hastings,[2] Hesse,[3] Rosenau[4] and others it is now established that the tubercle bacillus in milk loses its infective power for guinea-pigs when the milk is heated to 60 C. (140 F.) for twenty minutes. If the milk is maintained at 65 instead of 60, a shorter time will suffice. Other pathogenic bacteria sometimes present in milk, such as the bacilli of typhoid fever and diphtheria, are more readily killed by heat than the tubercle bacillus. As the result of many experiments it has been found that it is not safe to use temperatures lower than 59 or 60 C. (139 or 140 F.), since such temperatures do not insure destruction of pathogenic forms. On the other hand, it is desirable to keep the temperature to the lowest point that will still be bacterially effective, in order to minimize changes in the milk due to heating.[5] Exposure of milk in properly constructed pasteurizers to a temperature of 60 to 65 C. for twenty minutes surely destroys the tubercle bacillus and other pathogenic bacteria and does not affect appreciably the chemical or the "biologic" properties of the milk. That such a standard can be applied to work carried on under practical as well as laboratory conditions has been shown by many experimenters.[6]

Certain types of pasteurizing machines need to be carefully controlled in order to insure that the total volume of milk is heated to a definite temperature and

* This article is abbreviated in THE JOURNAL by omission of the tabulated details. The complete article appears in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

1. Smith, T.: Jour. Exper. Med., 1899, iv, 233.
2. Russell and Hastings: Rep. Wis. Agric. Exper. Sta., 1900, xvii, 170.
3. Hesse: Ztschr. f. Hyg., 1900, xxxiv, 347.
4. Rosenau: Bull. 42, Hyg. Lab., U. S. P. H. S., Washington, 1908.
5. From a commercial point of view the destruction of the cream line brought about by too high temperature is a marked disadvantage.
6. See, for example, Rosenau: Bull. 56, Hyg. Lab., U. S. P. H. S., Washington, 1909, p. 639. Trautmann: Gsndht. Ing., 1909, xxxii, 731. Haane: Gsndht. Ing., 1911, xxxiv, 489.

held there for a sufficiently long period. Schorer and Rosenau,[7] after careful experiments on the germicidal efficiency of a large commercial pasteurizer, conclude that a liberal factor of safety is necessary. They recommend 145 F. (63 C.) as the best temperature to meet practical conditions and advise that the milk should be held at this temperature from thirty to forty-five minutes. They also find that a single holding-tank is not so trustworthy as two, three or four in a series.

Although the establishment of a reliable working standard has been made possible through the experiments above referred to, a source of confusion for the general public still exists in the misuse of the term "pasteurization" by purveyors of milk. This is a kind of misbranding that concerns closely public health administration. At present it is possible in most American cities to sell milk as "pasteurized" which has never been subjected to proper control. Much of the existing procedure is simply pasteurization falsely so called. Milk heated to a temperature as low as 55 C. (131 F.) may perhaps keep somewhat longer than raw milk, but cannot be regarded as bacteriologically safe. Again, milk-dealers often use machines designed to expose milk for a brief period to a high temperature, such a method being known as the "continuous" or "flash" process in contradistinction to the "holding" process. Experiments have shown that, bacteriologically considered, the flash process is less reliable than the holding process. Several types of "pasteurizing" machines are marketed, and the efficiency of each type and to some extent that of individual machines can be determined only by actual experiment. Observations made under laboratory conditions are not directly applicable to pasteurization on a large scale.[8]

It is plain that to subject milk to an uncertain and variable temperature for an indefinite and variable time does not entitle the resulting product to the name "pasteurized." Hence the necessity to-day for an official technical definition of the term "pasteurization." The available data exist or can be readily secured. City ordinances should be drawn in a uniform manner, inspection and control of pasteurizing appliances and methods should be carried out, licenses should be issued and misbranding made a legal offense.

THE DANGER FROM RAW MILK

There is no doubt that many diseases are conveyed by raw milk. Bovine tuberculosis may be transmitted to man through the milk of tuberculous cattle. The danger is greater for children than for adults. Park and Krumwiede[9] have found that from 6 to 10 per cent. of the deaths from tuberculosis among New York children under 5 years of age are caused by bacilli of the bovine type. The final report of the British Royal Commission on Tuberculosis (1911) sums up the results of ten years' investigation in the following words: "The evidence which we have accumulated goes to demonstrate that a considerable amount of the tuberculosis of childhood is to be ascribed to infection with bacilli of the bovine type transmitted to children in meals consisting largely of the milk of the cow."

Typhoid fever is often caused by infected milk. In cities with a pure water-supply milk is probably the most common vehicle of infection. Trask[10] has compiled a list of 179 typhoid epidemics traced to milk, 107 of which occurred in the United States, forty-three in Great Britain, twenty-three in continental Europe, three in Australia, one in New Zealand and two in Canada. To this list should be added 138 outbreaks tabulated up to 1895 by Hart[11] and by Busey and Kober.[12] In Table 1, I have added a brief description of twenty-nine additional outbreaks kindly collected for me by Miss Edith Prindeville, making a total of 346.

Infection of milk with the typhoid bacillus as far as known never takes place from the cow itself, but always through human agency in the person of some typhoid convalescent, mild case, or "carrier," who either infects the milk directly during the process of collection or transportation or is indirectly the source of infection by excretal contamination of the surroundings of farm or dairy. Improper disposal of excreta on a farm may lead to infection of the milk in many ways, especially through contamination of the well-water used in rinsing utensils and through fly infection.

Diphtheria, like typhoid fever, may be caused by raw milk contaminated through human handling. Hart[11] has tabulated seven milk-borne outbreaks of diphtheria, Busey and Kober[12] twenty-one, Trask[10] twenty-three, and two are tabulated in Table 3, a total of fifty-three.

Wide-spread epidemics of scarlet fever are sometimes caused by milk. In Boston, during the first twenty days of January, 1907, 367 cases of scarlet fever suddenly appeared, and simultaneously about the same number of cases developed in Cambridge and neighboring towns.[13] About 84 per cent. of these cases were supplied by a single milk-dealer. A milk-taster who was employed by this dealer suffered from symptoms suggesting scarlet fever and had a daughter similarly affected. The method of tasting the milk consisted in plunging a long spoon into the can to be tasted, lapping the spoon, shaking it and plunging it into the next can. "The spoon was produced from a dirty pocket, and was plunged into the milk without washing or without rinsing between the lapping of the spoon and immersion into the next can." In Chicago in 1906 and 1907 an average of 135 cases of scarlet fever had been reported weekly for the six weeks ending January 11. The week ending January 18 there were 348 cases, and the following two weeks 1,005 and 1,689 cases, respectively. Shipment of milk from a suspected dairy was stopped, January 25, and the epidemic then slowly subsided.[14] Evanston and other north shore suburbs of Chicago to which milk was sent from the same dairy also suffered from scarlet fever at the time of the Chicago outbreak. Hart[11] has recorded fifteen, Busey and Kober[12] fifty-nine, Trask[10] fifty-one, and I twelve (Table 2), a total of 137 epidemics of scarlet fever traced to milk. There is no good evidence that cows actually suffer from scarlet fever. Savage,[15] however, has suggested that the well-known Hendon outbreak[16] and similar instances in which sick cows have been thought to be implicated may be explained on the assumption that animals suffering from a bovine disease of the teats and udder may acquire a local and secondary infection with the as yet unknown organism of scarlet fever. This view is supported by observations of Dean and Todd,[17] who isolated undoubted

7. Schorer and Rosenau: Jour. Med. Research, 1912, xxi, 127.
8. See, for example, Schorer: Am. Jour. Dis. Child., 1912, iii, 226.
9. Park and Krumwiede: Jour. Med. Research, 1911, xxv, 313.
10. Trask: Bull. 56, Hyg. Lab., U. S. P. H. S., Washington, 1909, p. 23.
11. Hart: Brit. Med. Jour., 1897, i, 1167, 1229, 1292.
12. Busey and Kober: Report of Health Officer of District of Columbia, 1895, p. 299.
13. Rep. Mass. State Board of Health, 1907, p. 491.
14. Hemenway: THE JOURNAL A. M. A., April 4, 1908, p. 1115.
15. Savage: Proc. Roy. Soc. Med., Epidemiol. Sec., 1911, iv, 73.
16. Rep. Local Govt. Board, Med. Officer's Suppl., 1885, p. 73.
17. Dean and Todd: Jour. Hyg., 1902, ii, 194.

diphtheria bacilli from the teat lesions of cows affected with an eruptive disease of the udder. The evidence obtained led these investigators to infer that the presence of the diphtheria bacilli was due to a superadded infection.

Outbreaks of milk-borne septic sore throat of a severe and often fatal type have been observed in England. Savage[15] has recorded eighteen such outbreaks, some of them very extensive (Colchester, 600 cases). A similar epidemic with 548 reported cases occurred at Christiania[18] in 1908. In the United States Winslow[19] has made a report on a very extensive outbreak occurring in Boston and vicinity in 1911 and involving over 1,000 cases and about fifty deaths. Similar outbreaks have been observed in Baltimore[20] and in Chicago.[21] Milk-borne outbreaks of gastro-intestinal catarrh have also, although rarely, been reported.[15] In countries where Asiatic cholera prevails this disease is not uncommonly conveyed by means of milk. Other diseases, such as anthrax, hydrophobia and foot-and-mouth disease are theoretically communicable through cow's milk to man, but from the public health point of view the danger from these diseases seems much less than from the infections previously mentioned.[22]

The relation of milk to infant mortality needs special consideration. To determine the effect of milk on the health of infants involves many difficult and intricate questions. Cow's milk is not the normal food for human babies and it is often impossible to discover to what extent digestive disturbances in young children are due to the natural unsuitability of the milk as a food substance and to what extent they are due to abnormalities in the milk. In general it is true that during hot weather raw milk with a high bacterial content is much more likely to produce illness or to predispose infants to illness than a fresh, clean milk containing few bacteria. During cool weather neither the health nor the mortality of infants seems to be appreciably affected by the number of bacteria milk contains. The evidence, as far as it exists, indicates strongly that milk destined as infant food should be as clean and fresh as possible, but it does not indicate the precise way in which stale and dirty milk produce their evil effects. Infants, like adults, are of course liable to specific infections conveyed in cow's milk and, as pointed out, are especially liable to contract tuberculosis from germs coming from the cow.

Since milk-borne diseases are to a considerable extent due to the use of milk from diseased cattle, to uncleanly dairy surroundings and to careless handling, it has been generally assumed that contamination and infection can be prevented by sanitary control of the process of milk collection and transportation. One important object of the campaign for clean milk and inspected milk so effectively waged by the medical milk commissions in this country has been the prevention of disease transmission. There is no doubt that the amount of milk-borne infection can be greatly lessened by such procedures as examination and testing of the dairy cattle, insistence on scrupulous cleanliness of the dairy surroundings and dairy employees, elimination of the house-fly, the reporting of infectious diseases developing on the dairy farm and among all employees, and, in a word, by all precautions that bacteriologic experience can suggest.

The question is beginning to be asked, however, whether it is humanly possible to eliminate all important sources of infection, even by strict regulation and watchful supervision.[23] The discovery that entirely healthy persons can be the bearers of virulent disease germs and can convey these germs to objects with which they come in contact has already had an important effect on public health practice and is nowhere more significant than in connection with the control of milk-supply. The New York City milk-supply comes from 44,000 farms, and probably over 200,000 persons are concerned in its production.[24] The Chicago milk-supply is derived from over 12,000 farms. Even supposing that the large body of individuals that are in close contact with the milk during collection, transportation and distribution can be properly trained and disciplined in some of the methods of the bacteriologic laboratory, unforeseen changing and shifting in the personnel is necessarily always taking place. Furthermore, a permanent and healthy employee may suddenly acquire a virulent disease germ and perhaps become a "carrier" over night, without there being any reason for him or his employers to recognize that he has become dangerous or to lead in any way to suspicion of his condition. A new milker may be engaged in a certified dairy and even if he is subjected to prior bacteriologic examination may conceivably be an "intermittent typhoid carrier," i. e., discharging typhoid bacilli only at intervals. Such a person may become dangerous within a few weeks or even a few days after he is taken on. He may never have been treated by a physician for typhoid fever and may have no ground whatever for supposing that he has suffered from the disease. In this case careful questioning and even bacteriologic examination might fail to elicit any cause for suspicion. The inefficiency of ordinary hand-washing is shown by such observations as that of Winslow,[25] who found the colon bacillus present on the hands of between 5 and 10 per cent. of all persons examined; it is well known that nurses in typhoid fever hospitals who are presumably cognizant of their danger nevertheless frequently become infected. Whether it is practicable to enforce bacterially effective hand cleansing in all milkers is a matter on which there may be some room for doubt. Nor can the danger from infective droplets, discharged from the mouth by coughing, sneezing, speaking or laughing be overlooked. Flügge and his pupils have shown that such droplets may float for some time (thirty minutes), and to some distance (3 or 4 feet). A slight unconscious cough by a milker who is well, but a carrier, may be the means of conveying infection to the milk. It is hardly necessary to add that most pathogenic bacteria when introduced into milk do not remain quiescent or even begin to die off as happens when they pass into water, but enter on a course of rapid multiplication which may result in spreading infection through a large volume of mixed milk.

Such considerations have to some extent been supplemented by concrete instances of the spread of the disease through the agency of carefully guarded milk-supplies.

18. Sömme: Lancet, London, 1908, i, 1707.
19. Winslow: Jour. Infect. Dis., 1912, x, 73.
20. Hamburger: THE JOURNAL A. M. A., April 13, 1912, p. 1109.
21. Miller and Capps: THE JOURNAL A. M. A., April 13, 1912, p. 1111; June 15, 1912, p. 1848.
22. The newly discovered abortion bacillus, the causal organism in the contagious abortion of cattle, is not certainly known to be pathogenic for man, but the possibility that it is so cannot be ignored (Smith, Theobald, and Fabyan, M.: Centralbl. f. Bakteriol., lvi). This bacillus has been found rather frequently in market milk (Circ. 198, Bureau of Animal Industry, U. S. Dept. of Agricul., March 2, 1912).
23. It is worthy of note that the majority of the Commission on Milk Standards appointed by the New York Milk Committee voted in favor of the pasteurization of all milk, including certified milk. See Standard Rules at the end of this article.
24. Monthly Bull., New York Health Dept., October, 1911.
25. Winslow: The Occurrence of the Colon Bacillus on the Hands, Jour. Med. Research, 1903, x, 463.

An epidemic of diphtheria among the students and faculty of the University of Minnesota occurring in May, 1911, was traced to milk from a dairy said to be one of "the cleanest and best regulated" in the Minneapolis district.[26] A personal letter from Dr. R. H. Mullin, director of the laboratory of the Minnesota State Board of Health, giving me permission to quote, states that "investigation of the dairy and of the workers connected with it demonstrated that one of the four men who had charge of the milking carried the granular form of diphtheria bacilli in his throat, although he had not suffered from sore throat or any other symptom of diphtheria." Bolduan and North,[27] in reporting a large epidemic of typhoid fever traced to a carrier of forty-six years' standing, call attention to the fact that milk may be infected by a chronic typhoid carrier, even though the carrier be cleanly in his habits. The particular dairyman implicated in this outbreak "was a better-class dairy farmer who kept his hands and his dairy much cleaner than the average dairyman. Moreover, he was personally clean."

One of the most striking instances of this sort is the outbreak of septic sore throat in eastern Massachusetts, reported by Winslow,[28] Darling,[29] Richardson[30] and Goodale.[31] This extensive epidemic, which involved more than 1,000 cases and caused fifty deaths, was clearly traced to an infected milk-supply. In Brookline, for example, 61 per cent. of the total cases occurred in houses supplied with this particular milk, whereas only 13.8 per cent. of the total number of houses received this milk. The implicated milk-supply from the Deerfoot farm had enjoyed the highest reputation for many years. Unusual precautions, detailed in Winslow's article, were taken to safeguard all stages of collection and handling. Regular examinations of the milk were made by a well-known Boston bacteriologist (Professor Prescott), and reference to these showed that a very low bacterial count obtained throughout the month when the epidemic occurred (May, 1911), fully one-half of the samples examined being below 10,000, the common standard for the best "certified" milk. Winslow, after a searching investigation, declared that he was "at a loss to suggest any other precaution that could have been taken to guard against infection with human germs or that were not taken in this instance," and he concluded that "if, in spite of such precautions, the Deerfoot milk became infected, any raw milk-supply may at any time become infected." In a discussion of the paper cited above, Rosenau[32] states that the epidemic "goes to show that it is impossible to produce raw milk that may sometimes not convey some such danger," and Sedgwick[32] affirms that "the greatest lesson of all is the utter inadequacy of milk inspection." Since experts familiar with the conditions on the Deerfoot farm could find nothing to criticize in the methods there employed, it is clear that the theoretical objections to the use of raw milk are justified by actual events.

An example of danger narrowly averted is afforded by the experience of a dairy furnishing certified milk in Essex County, N. Y.[33] The visiting physician discovered that one of the milkers had a sore throat and high fever and promptly isolated him. The disease proved to be scarlet fever and a few days later another employee became ill with the same disease. Efficient isolation and disinfection were carried out and the Milk Commission directed the heating (first to 185 F. and later to 150 F.) of all milk taken from the dairy. The disease did not spread. This instance is not merely a tribute to the value of inspection; it is also an illustration of the slender margin of safety. Whether daily and competent medical inspection of all dairy employees and their families is a burden that the milk business can properly be asked to bear is a question for careful consideration. As already pointed out, even such inspection, unless supported by bacterial examination, is not competent to discover the healthy carrier of diphtheria bacilli.

THE ADVANTAGES OF PASTEURIZATION

Assuming that pasteurization is definitely and legally recognized as an exposure for twenty minutes to a temperature of 60 to 65 C. (140 to 149 F.) or is defined in some similar way in accordance with the available bacteriologic data, what are the advantages, if any, to the public health from the general pasteurization of milk-supplies? Theoretically, general pasteurization should reduce the amount of milk-borne disease. Does it in point of fact do this? Unfortunately, the data are very meager.

There are few if any instances in which the conditions satisfy the requirements of a scientific experiment, where change from a raw milk-supply to an effectively pasteurized one has taken place abruptly, and has been accompanied by no essential change in other hygienic factors. Sudden and radical changes in the character of a city water-supply often take place, but not in that of a milk-supply. As a rule the pasteurization of city milk is introduced gradually and is not of uniform efficiency. In some cities the "flash" method is employed exclusively,[34] in others the "holding" method, but in most cities both methods are in use. Official control of the pasteurizing process is at present far from effective and it is impossible in many cases to be sure what proportion of the city milk is really pasteurized in the strict bacterial sense. For these reasons the actual effects of general pasteurization cannot often be demonstrated.

At the same time evidence is accumulating as to the efficacy of pasteurization in preventing milk-borne disease. There are some specific instances like the one reported by Rosenau, Lumsden and Kastle,[35] who found that the lowest proportion of typhoid fever cases on any milk-route in Washington in 1906 and 1907 was on the route of the only dealer who sterilized his milk-bottles and pasteurized the milk.

It is generally known also that typhoid fever is as a rule more prevalent in the cities of the United States than in European cities of corresponding rank. This is true even of those American cities possessed of a perfectly good public water-supply. The most plausible explanation for the existence of this high typhoid rate in American municipalities is that the almost universal practice in Continental Europe of heating milk shuts out this food as a common source of typhoid fever, while in this country the general use of raw milk opens the door wider for infection by this channel.

It is a tempting hypothesis that the striking decrease in typhoid fever that has occurred in some American

26. Diphtheria and Milk in Minneapolis, THE JOURNAL A. M. A., July 1, 1911, p. 30.
27. Bolduan and North: THE JOURNAL A. M. A., Jan. 6, 1912, p. 7.
28. Winslow: Jour. Infect. Dis., 1912, x, 75; Boston Med. and Surg. Jour., 1911, clxv, 899.
29. Darling: Boston Med. and Surg. Jour., 1911, clxv, 904.
30. Richardson: Boston Med. and Surg. Jour., 1911, clxv, 907.
31. Goodale: Boston Med. and Surg. Jour., 1911, clxv, 908.
32. Boston Med. and Surg. Jour., 1911, clxv, 910.
33. North, Eng. News, 1909, lxii, 106. See also Thirty-Third Ann. Rep. N. Y. State Board of Health, 1909.
34. Schorer: Jour. Am. Pub. Health Assn., 1911, i, 851.
35. Rosenau, Lumsden and Kastle: Bull. 44, Hyg. Lab., U. S. P. H. S., Washington, 1908.

cities in the past few years is in large part due to the increased proportion of pasteurized milk sold in these cities. In Chicago, for example, about 2 per cent. of the milk-supply had been pasteurized prior to 1908. In July, 1908, an ordinance was passed to take effect Jan. 1, 1909, requiring pasteurization of milk from herds untested with tuberculin. This led quickly to a pasteurization of something over one-half of the total milk-supply. In 1910 it was estimated that 75 per cent. of the supply was subjected to the heating process. Table 1 gives the death-rate from typhoid fever in Chicago for the years since the opening of the drainage canal, an event which was accompanied by cessation of the extreme city water-supply pollution which had previously prevailed.

TABLE 1.—CHICAGO TYPHOID DEATH-RATE AFTER OPENING OF DRAINAGE CANAL

Year	Typhoid Fever Deaths Per 100,000 Population	Year	Typhoid Fever Deaths Per 100,000 Population
1900	19.8	1906	18.5
1901	29.1	1907	18.2
1902	44.5	1908	15.8
1903	31.8	1909	12.6
1904	19.6	1910	13.7
1905	16.9	1911	10.8

Av. prior to 1908,* with 2 per cent. or less of milk pasteurized..24.8
Av. of the lowest three typhoid rates prior to 1908.....17.9
Av. 1909, 1910 and 1911, with 50 to 75 per cent. of milk pasteurized.....12.4

* 1908 omitted as being a year of transition, and toward its close of increasing pasteurization.

Whether or not the marked decline in the Chicago typhoid death-rate since 1907 is really the effect of pasteurization, the coincidence is worthy of attention.

In Boston a similar decline may be observed (Table 2).

TABLE 2.—BOSTON TYPHOID DEATH-RATE

Year	Typhoid Fever Deaths Per 100,000 Population	Year	Typhoid Fever Deaths Per 100,000 Population
1891-1895	31.1	1906-1910	16.0
1896-1900	30.6	1911	9.1
1901-1905	22.4		

Average of the lowest typhoid rates prior to 1909.....16.9
Average of 1909, 1910 and 1911.....11.5

In 1910 about one-half of the Boston supply was said to consist of heated milk, in 1911 a still larger proportion. In 1911 only 479 cases and 63 deaths from typhoid fever were reported, the smallest numbers absolutely as well as relatively ever recorded in the sanitary history of the city.[36] Other factors have doubtless been at work to reduce the amount of typhoid fever, but it is hard to resist the conclusion that the increasing use of heated milk is largely responsible for the recent striking diminution.

In New York City a regulation effective Jan. 1, 1912, provides for compulsory pasteurization of the great bulk of the milk-supply. The effect of the measure on the city's health will be watched with interest and a decline in milk-borne disease may be confidently predicted.

Perhaps the advantage most frequently urged for pasteurized milk is its effect in reducing infant mortality. Such statistics as the oft-quoted figures from the infants' hospital on Randall's Island, New York,[37] showing an average reduction in infant death-rate from 41.81 in the year before pasteurization to 21.75 in the years following the installation of a pasteurizing plant, no other change in hygiene or diet being made, certainly indicate a beneficial effect. The well-known investigation by Park and Holt[38] in New York City showed that infants fed with heated milk of average quality did much better in warm weather than infants fed with precisely similar milk in a raw condition. These observers state that "the difference was so quickly manifest and so marked that there could be no mistaking the meaning of the results."

In New York and a number of other American cities the pioneer philanthropic work of Nathan Straus has made possible the establishment of milk depots from which pasteurized milk has been distributed. The establishment of such milk depots has been followed in every instance known to me by a noteworthy reduction in infant mortality. Freeman,[39] as the result of his studies in the city of New York, came to the conclusion that by far the most important agency in bringing about the "striking decline" in infant mortality was the general adoption of pasteurization and sterilization of milk for infant feeding. It is of course not possible to attribute the total reduction in infant death-rate to the use of heated milk, since usually other factors, such as education of the mothers in methods of feeding, the use of milk modifications and similar improvements have been simultaneously put in force, but there seems little doubt that at least some share in the reduction is to be credited to the use of pasteurized milk. Further detailed studies of the effect of pasteurized milk on the health of babies would be of value.

The low cost of pasteurization[40] as compared with farm inspection is a point in its favor. Even assuming that farm inspection were as efficient as pasteurization in preventing the delivery of living disease germs to the milk-consumer, the cost per case of disease prevented would probably be much greater by the inspection method than by the pasteurization method. The economic advantage of pasteurization to the milk dealer by preventing rapid souring is sufficiently obvious and need not be dwelt on here.

OBJECTIONS TO PASTEURIZATION

Many objections have been urged against pasteurization. Some of these have reference to the inherent nature of the process, others to remediable defects in current procedure. To declare that pasteurization is "a fraud" because some unscrupulous dealers try to palm off heated dirty milk for clean raw milk is about as reasonable as to maintain that weights and measures should not be used because they make practicable cheating under the guise of accuracy. It is self-evident that the process of pasteurization should be regulated and controlled and that pasteurized milk like raw milk should not be sold except under official sanction. If "commercial pasteurization" is to-day carried out on wrong lines, municipal regulation must set it right. To insist that inspectors may be corrupt is not an indictment of pasteurization but of municipal government or, some may choose to say, of democracy. In point of fact, municipal supervision and regulation are exercised efficiently to-day in

36. In 1856, when typhoid fever first appears under a separate heading, there were seventy deaths in a population of 163,820, and only once before 1911 was a lower number than this recorded—sixty-four in 1907.

37. Bull. 56, U. S. P. H. S., 1909, p. 243.

38. Park and Holt: Arch. Pediat., 1903, xx, 881.

39. Freeman: Med. News, Sept. 5, 1903.

40. In Chicago the cost is said to range from one-thirtieth of a cent per gallon for large plants to 0.85 cents per gallon for one small plant. (Report of Senate Committee of the Forty-Sixth General Assembly to investigate the tuberculin test and the pasteurization of milk and its products.)

more complicated matters than the pasteurization of milk. It is clear that some of the oft-repeated objections to pasteurization are based on a mere matter of deceptive labeling. Calling milk pasteurized does not make it so. Objections to "commercially pasteurized" milk do not hold for properly heated milk.

It is sometimes alleged that pasteurization does not avoid the danger of milk transmission of disease, since fresh infection of the milk after pasteurization may occur. There is no doubt that the danger is a real one, as is shown, for example, in the case reported by Davies and Hall.[41] In the outbreak investigated by these writers, typhoid fever appeared in an institution in Bristol, England, and was traced to milk which, through handling by a carrier, had become infected after sterilization. Such a possibility may be met and should be met by requiring commercially pasteurized milk to be delivered in the original package. Heinemann[42] pointed out some time ago the advantages of narrow-necked bottles with tightly fitting caps, of the same type so successfully used in the bottling of pasteurized beer. With the proper apparatus the cleaning of such bottles offers no obstacle. North[43] has obtained remarkably satisfactory results in treating milk by the ordinary beer pasteurizing process, over 99.5 per cent. of all bacteria being destroyed. The great advantage of the method, however, is the security it affords against recontamination. In the method described by Carter,[44] raw milk conforming to Boston requirements (less than 500,000 bacteria per cubic centimeter) is drawn into bottles each of which is provided with a crimped metal-capped cork seal similar to those used on beer bottles. After sealing, the bottles are heated under official inspection to 150 F. for thirty minutes and are then delivered to the consumer in the sealed and final package. By some such method, infection of pasteurized milk *en route* can be altogether avoided. Once in the home it is in little if any more danger of contamination than other raw foods. I am aware that some writers have asserted that if disease germs are ever introduced into pasteurized milk they multiply more rapidly than in raw milk, but there is no experimental or epidemiologic evidence to support this view.

An objection to the use of pasteurized milk which perhaps has been more widely quoted than any other, dates back to the work of Flügge.[45] This observer drew attention to the fact that milk, after being heated, might contain bacterial spores which later under favorable conditions could germinate. He also isolated three species of peptonizing bacteria from heated market milk which were able to cause the death of laboratory animals when injected. Milk-cultures of these bacteria fed to puppies were thought to produce illness, and in one instance death. Flügge's experiments seem to have been carried out with samples of milk of unspecified origin which had been heated at the boiling-point for considerable periods. Such observations are not applicable to the pasteurizing process. Colwell and Sherman[46] have since found that pasteurization at 60 C. appears to restrain peptonizing to about the same extent that it restrains souring. They also state that pasteurization "apparently had no constant effect in rendering the milk either more or less liable than raw milk to the development of offensive odors." Ayers and Johnson,[47] furthermore, have shown in a comprehensive study of commercially pasteurized and raw market milk that commercially pasteurized milk always sours through the development of lactic acid bacilli which survive the heating process. The thermal death-point of one lactic acid organism isolated from milk was found to be 75.6 C. (168 F.) when heated in milk for thirty minutes. They also found that the relative proportion of the groups of peptonizing, lactic acid and alkali-forming bacteria is approximately the same in effectively pasteurized milk and in raw milk. Bacterial increase in efficiently pasteurized milk and in clean raw milk is about the same under similar temperature conditions. There is, therefore, no ground whatever for the assertion that pasteurization, by destroying the lactic acid bacteria, leaves the field open for the development of "dangerous" peptonizing forms. As pointed out by Rosenau,[48] Flügge's contentions for the most part have not been confirmed and we have to-day practically no positive evidence in regard to the bacterial productions of poisons in milk.

A curious objection which is sometimes advanced is that the "life" of the milk is destroyed by heating and that this impairs the value of the milk as human food. In this crude form the objection is evidently meaningless. Even if the destruction of milk enzymes by heat is implied by such an objection there is hardly more foundation for the claim. The enzymes in milk are for the most part resistant to temperatures of 60 to 65 C. for at least twenty minutes.[49] In some cases, however, as with superoxydase (katalase), heating at relatively low temperatures (56 C.) will cause partial weakening or (62 C.) complete destruction. The feeble germicidal power that milk has for certain bacteria is also weakened by temperatures in the neighborhood of 60 C. The leukocytes present in normal milk are killed by heating, but there is no reason to believe that the maintenance of the integrity of these cells from the cow is in any way important in the process of assimilation in the alimentary tract of man.

There are unquestionably changes produced in milk by heating, especially in the labile compounds represented by the enzymes and antibodies of various sorts. Not a particle of evidence exists, however, for ascribing to such substances a favorable influence on human digestion and metabolism. The enzymes in raw meat or in raw potatoes are for all we know as useful as those in raw milk. It may be asked why bovine enzymes should be supposed to add anything to the efficacy of the enzymes normally present in the human alimentary tract. Until positive demonstration has been made that some benefit is obtained from the ingestion of milk enzymes, little importance can be attached to purely hypothetical considerations of this character.

With respect to other changes produced in milk by heating, it may be said that while boiling produces decomposition and precipitation of the proteins, precipitation of salts, coalescence of the fat globules and other alterations which affect the palatability, and possibly for some children the assimilability, of the milk, pasteurization is open much less, if at all, to such objections. By this process, carefully controlled, changes in the chemical and physical properties of the milk are inappreciable.

41. Davies and Hall: Proc. Roy. Soc. Med., Epidemiol. Sec., 1908, i, 171.
42. Heinemann: Arch. Pediat., June, 1908.
43. North: Jour. Med. Research, July 15, 1911, p. 111.
44. Carter: Jour. Am. Pub. Health Assn., 1911, i, 664.
45. Flügge: Ztschr. f. Hyg., 1894, xvii, 272.
46. Colwell and Sherman: Jour. Biol. Chem., 1908, v, 247.
47. Ayers and Johnson: Bull. 126, Bureau of Animal Industry, Washington, November, 1910.
48. Rosenau: Bull. 56, U. S. P. H. S., 1909.
49. Kastle and Roberts: Bull. 56, U. S. P. H. S., 1909, p. 322. Seligman: Sommerfeld's Handbuch d. Milchkunde, 1909, p. 306.

EFFECT OF PASTEURIZED MILK

After all theoretical objections have been canvassed, however, the practically important question remains to be answered whether infants fed with pasteurized milk are any better or any worse off than those fed with raw milk. Putting aside for the moment the question of the conveyance of specific infection or the possible deleterious influence of large numbers of bacteria, what is the effect on individual metabolism of milk heated for twenty minutes at 60 C. as compared with that of the same milk in a raw condition. It is well known that some experienced clinicians are inclined to attribute such conditions as scurvy or rickets in young children to the continued use of heated cow's milk, but on the other hand it is pointed out that similar metabolic derangements are observed in children fed with raw cow's milk or even in breast-fed infants. Brennemann's observations,[50] indeed, indicate that raw milk is much more likely than boiled milk to produce large hard curds which are surely a hindrance to digestion. No distinction is noted in some of the reported cases between boiled milk and pasteurized milk, and the data printed are often far from complete. Speaking broadly, there is no doubt that many infants can be fed without appreciable ill effect for long periods with heated milk — boiled or pasteurized — but this, perhaps, does not justify us in assuming that some individuals may not be injuriously affected. As regards boiled milk, rather convincing observations have been lately put forth by Janet Lane-Claypon.[51] There it is shown that while infants, like other young animals, thrive best on the milk of their own species, it is immaterial as far as nutrition is concerned whether the milk is boiled or not. Infants fed with milk drawn from the breast of a wet-nurse and boiled previous to use appear to thrive just as well as when the same milk is given fresh. At the end of a year the babies fed on boiled milk showed no greater percentage of rickets than breast-fed babies.

As the case stands there is no conclusive proof that infants are injured by being fed properly pasteurized milk instead of the same milk raw: on the whole we may rest reasonably assured that pasteurized milk is under most conditions as good for infants as clean raw milk.

Objection to pasteurization on the ground that it permits the continuance of uncleanly methods of collecting and handling has little weight. A simple test for the presence of dirt in the milk, such as that in use by the Chicago Health Department, may be applied to pasteurized as well as to raw milk.[52] It is self-evident that unless milk comes up to a certain standard, neither delivery of the milk raw nor pasteurization of the milk should be permitted. In any case, some standard must be established and upheld.

HOME PASTEURIZATION

"Home pasteurization" of milk is sometimes urged as preferable to pasteurization on a large scale by milk dealers. Under some conditions it is probably true that pasteurization can be carried out effectively in the home, but in many cases proper and uniform treatment can hardly be hoped for. As a rule attempts to induce householders to "boil the water" lead to less satisfactory sanitary results than centralized purification of the water-supply under expert supervision. With a little skill in laboratory manipulation, a good thermometer and some time and patience it need not be a difficult matter to pasteurize milk successfully in the home. Unfortunately these requisites are not always found. There is reason to think that "home pasteurized" milk is in general heated to an overhigh temperature and is not rapidly enough cooled.

Among the many attempts to reduce home pasteurization to a mechanical procedure involving a few simple operations rather than careful watching, Freeman's home pasteurizer is the most successful.[53] Only fresh, clean milk should be used and the process should be carried on under proper hygienic conditions. In the directions given by Nathan Straus for the use of a modification of the Freeman pasteurizer, the bottles of milk after being warmed for five minutes are immersed up to the lip in boiling water. After the source of heat is removed the bottles are left standing in the gradually cooling water (covered) for twenty-five minutes. They are then taken out and quickly chilled with cold water and ice. According to the figures given by Straus, eight 3-ounce bottles may be treated in this way by immersion in 5 quarts of water while eight 6-ounce bottles need 6¾ quarts of water, and six 1-pint bottles 9 quarts.[54]

THE NECESSITY FOR MUNICIPAL CONTROL

All the foregoing considerations point unmistakably to one of the greatest needs in municipal health administration in many American cities to-day, namely, the enforcement of a pasteurizing ordinance. The observations of Koehler and Tonney[55] in Chicago exemplify the immediate need for municipal control of the pasteurizing process. While it is probably true that a certain amount of the highest grade clean, raw milk (certified) will continue to be asked for, the expense requisite for production will alone put certified milk for a long time out of reach of many consumers. The bulk of the city milk-supply may be brought up to a certain qualitative level by competent inspection, but beyond a given point it cannot be forced without an increase in cost not commensurate with the advantage obtained. Inspected milk of average quality may be rendered safe for human consumption by a process of real pasteurization prescribed and regulated by the municipal health authorities. No one cognizant of the facts can doubt that general pasteurization under official sanction will prevent a large amount of milk-borne disease. On the other hand, uncontrolled pasteurization opens the door wide to the abuses already mentioned. Under some conditions the name "pasteurization" may be made to serve simply the ends of careless producers or unscrupulous dealers. It is plain that the commercial exploitation of a scientific process should not be allowed to obscure the merits of the process. In the interests of public health, pasteurization should be technically and legally defined and should be subject to competent regulation.

STANDARD RULES FOR THE PRODUCTION, HANDLING AND DISTRIBUTION OF MILK[56]

MILK FOR PASTEURIZATION

Requirements

1. It shall be cooled to 60 F. or below within two hours after it is drawn from the cow, and it shall be held at or

50. Brennemann: Am. Jour. Dis. Child., 1911, i, 341.
51. Report to Local Government Board, N. S. No. 63, 1912; abst. Lancet, London, April 27, 1912, p. 1140.
52. Tonney, F. O.: Am. Jour. Pub. Health, 1912, ii, 280.
53. Freeman: Arch. Pediat., 1896.
54. A simple device for the home pasteurization of milk is described, with full directions, in Circular 197, Bureau of Animal Industry, U. S. Dept. Agric., Washington, D. C., April 19, 1912.
55. Koehler and Tonney: THE JOURNAL A. M. A., March 11, 1911, p. 713.
56. Report of the Commission on Milk Standards Appointed by the New York Milk Committee, Public Health Reports, Washington, D. C., May 10, 1912.

below that temperature until it is pasteurized. After pasteurization, it shall be held at a temperature not exceeding 50 F. until delivered to the consumer.

2. It shall not be adulterated by the addition to, or the subtraction of, any substance or compound, except for the production of the fluid derivatives allowed by law.

3. It shall not be tested by taste at any bottling-plant, milk-house, or other place in any way that may render it liable to contamination.

4. It shall be bottled only in a milk-room or bottling-plant for which a license or permit has been issued.

5. It shall be delivered in bottles, or single service containers, with the exception that 20 quarts or more may be delivered in bulk to establishments in which milk is to be consumed or used on the premises.

6. It shall not be stored in, or sold from, a living-room or from any other place which might render it liable to contamination.

7. Pasteurized milk shall be distinctly labeled as such, together with the temperature at which it is pasteurized, and the shortest length of exposure to that temperature and the date of pasteurization.

Recommendations

1. No milk shall be repasteurized.

2. The requirements governing the production and handling of milk for pasteurization should be raised wherever practicable.

PASTEURIZING PLANTS

Requirements

1. They shall be clean, well-screened and lighted, and shall be used for no other purpose than the proper handling of milk and the operations incident thereto, and shall be open to inspection by the health authorities at any time.

2. They shall have smooth, impervious floors, properly graded and drained.

3. They shall be equipped with hot and cold water and steam.

4. Ample provision shall be made for steam sterilization of all utensils, and no empty milk-containers shall be sent out until after such sterilization.

5. All utensils, piping and tanks shall be kept clean and shall be sterilized daily.

Recommendations

1. Containers and utensils shall not be washed in the same room in which milk is handled.

STORES

Requirements

1. All stores in which milk is handled shall be provided with a suitable room or compartment in which the milk shall be kept. Said compartment shall be clean and shall be so arranged that the milk will not be liable to contamination of any kind.

2. Milk shall be kept at a temperature not exceeding 50 F.

Recommendations

1. Milk to be consumed off the premises may be sold from stores only in the original unopened package.

GENERAL REGULATIONS

Requirements

1. The United States Bureau of Animal Industry score-card shall be used, and no milk from a dairy that scores below 40 on such card shall be pasteurized for sale, except for industrial purposes.

2. Every place where milk is produced or handled and every conveyance used for the transportation of milk shall be clean.

3. All water-supplies shall be from uncontaminated sources and from sources not liable to become contaminated.

4. The license or permit shall be kept posted in a conspicuous place in every establishment for the operation of which a milk license or permit is required.

5. No milk license or permit shall at any time be used by any person other than the one to whom it was granted.

6. No place for the operation of which a license or permit is granted shall be located within 100 feet of a privy or other possible source of contamination, nor shall it contain or open into a room which contains a water-closet.

7. No skim-milk or buttermilk shall be stored in or sold from cans or other containers unless such containers are of a distinctive color and permanently and conspicuously labeled "skim-milk" or "buttermilk," as the case may be.

8. No container shall be used for any other purpose than that for which it is labeled.

9. Milk from cows that have been rejected by the tuberculin test, but which show no physical signs of tuberculosis, as well as those which have not been tested, may be sold provided that it is produced and handled in accordance with all the other requirements herein set forth for pasteurized milk.

10. Ice used for cooling purposes shall be clean

Recommendations

1. No person whose presence is not required shall be permitted to remain in any cow-stable, milk-house, or bottling-room.

PASTEURIZED CREAM

Requirements

1. It shall be obtained only from milk that could legally be sold as milk under the requirements hereinbefore set forth.

2. Pasteurized cream, or cream separated from pasteurized milk, shall be labeled in the manner herein provided for the labeling of pasteurized milk.

STANDARDS FOR PASTEURIZED MILK

Requirements

1. It shall not contain more than 1,000,000 bacteria per cubic centimeter before pasteurization, nor over 50,000 when delivered to the consumer, and no colon bacilli in 1 c.c. as determined by cultural methods.

2. The standards for the percentage of milk fat and of total solids shall be the same as for raw milk.

Recommendations

1. The limits for the bacterial count before pasteurization and after pasteurization should both be lowered if possible.

STANDARDS FOR PASTEURIZED CREAM

Requirements

1. No cream shall be sold that is obtained from pasteurized milk that could not be legally sold under the provisions herein set forth, nor shall any cream that is pasteurized after separation contain an excessive number of bacteria.

2. The bacterial count of pasteurized cream shall not exceed 100,000 bacteria per cubic centimeter when delivered to the consumer.

3. The percentage of milk fat shall be the same as for raw cream.

Penalty

Every milk ordinance should contain a penalty clause.

I am indebted to Miss Edith Prindeville for assistance in preparing the accompanying tables. None of the outbreaks recorded were included in Trask's tables.

The Respective Rôles of Theory and Observation.—In connection with malaria, Laveran's name will ever be remembered as the discoverer of the parasite, but the practical application of the knowledge Laveran gave us was without significance until Manson's mosquito-malaria theory was enunciated. It has been the same with many similar discoveries. Waller in London, for instance, saw the leukocytes leave the blood by passing through the capillary walls and gain the surrounding tissues; the fact, however, remained a mere physiologic observation, and it was not until Cohnheim showed the pathologic meaning of the extrusion of the leukocyte that the significance of the observation was manifest. Again, Lister gave us the practical application of Pasteur's researches. On the other hand, modern science is attempting to explain Jenner's observation concerning small-pox, and the physiologist's observations of to-day are explaining scientifically the meaning of the dietary laws of Moses.—*Journal Tropical Medicine and Hygiene.*

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HOSPITAL MORTALITY IN MEASLES

It has become a common belief that every child must pass through an attack of measles, and the disease is therefore regarded rather lightly. This belief is justified by the fact that in most cases there are uneventful recoveries. Heubner found a mortality of 6.5 per cent. in all his clinic cases during fifteen years. In the better class of homes the mortality was but 3.3 per cent. It has been noted, however, that in hospital cases a somewhat higher mortality exists, and Wladimiroff,[1] who has analyzed the statistics of St. Wladimir's Hospital at Moscow for fifteen years, advances several reasons for this: Only those patients with severe cases are brought into hospitals; the patients with measles are crowded to make more room for scarlet fever and diphtheria patients; mixed infections occur; severer diseases are complicated frequently by measles, and there may be a lack of careful nursing given in the more severe diseases. In a comparison of the mortality of the three diseases in this hospital for the years 1887 to 1905 some interesting results are obtained. Thus the average mortality from measles was 18.7 per cent., or six times as great as among the better class of patients treated at home. In reality, this mortality was even higher, as those cases which complicated scarlet fever or diphtheria were reckoned with the latter.

As is well known, the mortality in measles is generally due to lung complications, although in hospital cases the mortality seems more often to be due directly to the measles. In such instances death is rapid and occurs in the first week of the disease. Delirium or coma, high temperature and difficult respiration are present; the skin is more blue than red, as usual in measles, and the mucous membranes are dry and brown. The excitation of the nervous system goes into depression, and death follows quickly. At the autopsy are found edema and hyperemia of the brain, dilatation of the heart, hyperemia of the bronchial mucous membranes, which are covered with a thick mucus, hyperplasia of the spleen, of the solitary follicles and of Peyer's patches in the intestines, and cloudy swelling and fatty changes in the liver. Death under such conditions is due to measles pure and simple and reminds one of a malignant scarlet fever so that we may speak also of malignant measles.

In one case examined by Wladimiroff, death occurred suddenly in the first week. The autopsy revealed the ordinary conditions in acute measles. The throat cultures had been free from diphtheria bacilli during life, but after death a few non-virulent diphtheria bacilli were found in the heart's blood. As the death resembled that due to vagus paralysis in diphtheria, a study of the vagus and phrenic nerves was made, which showed that distinct changes had taken place in these nerves, although of a different type from that of the changes in diphtheria. There were degenerations and fibrous changes in the sheaths of both nerves. Wladimiroff concludes that death in this instance was due to a paralysis of the vagus as a result of measles intoxication. In view of the finding of the diphtheria bacilli in the heart's blood at autopsy, it will be necessary to await further observations before accepting this case as a death from vagus paralysis due to the measles virus.

The occurrence of severe cases of measles emphasizes the necessity of watching measles patients with more than a mere perfunctory interest. Whether at home or in the hospital they should receive the same watchful care that is given to patients with scarlet fever; and in hospitals overcrowding, mixed and cross-infections, and the propagation of especially virulent forms of measles must be avoided.

1. Wladimiroff: Arch. f. Kinderh., 1912, lviii, 346.

THE PROMOTION OF GROWTH

Aside from such severe and familiar manifestations as scurvy and rickets, there are doubtless numerous nutritive disorders which may seriously upset the health and comfort of individuals owing to some hitherto unsuspected and supposedly insignificant deficiency in the dietary. The bearing of this has repeatedly been emphasized in the various discussions on the etiology and treatment of beriberi which have of late appeared in the columns of THE JOURNAL.[1] The fact is that man and animals subsist on plant and animal tissues which contain a multitude of other substances beside the proteins, fats and carbohydrates around which cluster those ideas about energy that have so long dominated all discussion of nutrition. The possibility of prolonged successful maintenance and development on mixtures of the isolated foodstuffs proper, that is, on so-called synthetic dietaries, has as yet received scanty experimental demonstration,[2] so that there has arisen a growing belief in the importance of some substance or substances commonly present in mixed food and vaguely included

1. Polished Rice, Beriberi and the Nervous System, editorial, THE JOURNAL A. M. A., July 6, p. 42; Historical Note on the Use of Beans in Beriberi, editorial, THE JOURNAL A. M. A., July 20, p. 201; Recent Japanese Investigations on Rice Bran in Relation to Disease, editorial, THE JOURNAL A. M. A., September 14, p. 883. The matter has also been discussed at various times by correspondents of THE JOURNAL.

2. For the literature on the subject compare Osborne, T. B., and Mendel, L. B.: Publications of the Carnegie Institution of Washington, 1911, No. 156.

among the food "accessories," for satisfactory nutritive progress.

A highly suggestive illustration of the potency of such factors has been furnished by F. Gowland Hopkins of the Physiological Laboratory at Cambridge, England.[3] In a series of striking experiments on rats he has shown that something present in normal foodstuffs, when added to the dietary in astonishingly small amount, can secure the utilization for growth of protein and energy contained in otherwise inadequate artificial food mixtures. For example, the addition of a minute ration of fresh milk sufficed to induce excellent growth for some weeks on a basal diet of purified materials (casein, starch, sugar, fat, salts) on which the rats had failed to grow. The favorable outcome cannot be attributed to any ordinary familiar nutrient contributed by the milk addendum; for the quantity of the latter sufficient to decide between failure and successful growth was far too small to have any quantitative significance. The milk made up less than 4 per cent. of the food eaten. The absolute energy consumption of the animals growing rapidly with the milk addition was greater than those not growing on the basal dietary alone; but the consumption per unit of live weight was nearly the same in comparable groups. It is a surprising fact that the small quantity of milk reduced the food consumption necessary for a given weight-increment to one-half or less. In the light of such facts, one is tempted to speculate as to the economic aspect of feeding methods in animal husbandry which may so markedly modify the cost of production in growing live stock, entirely aside from the inherent suggestion for infant nutrition.

One might incline to attribute such results in enhanced growth to a specific development of the appetite. But there is evidence that the abundance of the food intake is not the essential point. The remarkable efficiency of milk products in promoting growth has been demonstrated in this country by Osborne and Mendel.[4] Milk, however, is not the only mother-substance of such factors. They have been obtained in the protein-free and salt-free extracts of yeast; and as yet such studies have seen only their beginning.[5]

In considering the presumable explanation of the facts brought out, it seems unlikely that the "extracts," etc., furnish any complex which the body itself cannot synthesize. The quantities used seem far too small for this. We are rather inclined to think of some catalytic or stimulative function. Excitants of secretory activity are now well known; why not postulate similar influences on growing tissues? We may even picture the glands with internal secretion in the rôle of an intermediator. At present it is all preeminently hypothesis. As Hopkins trenchantly remarks: "If the attachment of such indispensable functions to specific accessory constituents of diets is foreign to current views on nutrition, so also is the experimental fact that young animals may fail to grow when they are daily absorbing a sufficiency of formative material and energy for the purposes of growth."

3. Hopkins, F. Gowland: Feeding Experiments Illustrating the Importance of Accessory Factors in Normal Dietaries, Jour. Physiol., 1912, xliv, 425.

4. Osborne, T. B., and Mendel, L. B.: The Rôle of Different Proteins in Nutrition and Growth, Science, N. S., 1911, xxxiv, 722.

5. Compare Funk, C.: The Preparation from Yeast and Certain Foodstuffs of the Substance the Deficiency of Which in Diet Occasions Polyneuritis in Birds, Jour. Physiol., 1912, xlv, 75.

THE FILTERABLE VIRUSES

An interesting summary of the present status of knowledge on the filterable viruses has been made by Wolbach,[1] and several suggestions as to future work may be derived from his presentation. As the field of investigation covers a period of only twelve years, it is not surprising that much remains yet to be done. At present there are in all thirty diseases of human, plant and animal life which have been demonstrated as due to this cause. Of those which affect man there are foot-and-mouth disease, rabies, vaccinia and variola, which also affect animals, and yellow fever, molluscum contagiosum, dengue fever, verruca vulgaris, trachoma, sand-fly or three-days fever, poliomyelitis, typhus fever and possibly measles and scarlet fever. The list is an imposing one. The filterable viruses are bodies so small as to be practically invisible and to pass through the pores of a Berkefeld or a Chamberland filter, which will retain even very small cocci. With the highest microscopic power, no bodies smaller than 0.2 micron can be seen; by use of the ultraviolet rays and the ultramicroscope, bodies as small as 0.1 micron may be seen. Below this size, all is invisible. It is manifest then that so far as direct observation of bodies contained in such viruses is concerned the problem is largely one of physics and mechanics.

It is of interest that cell inclusions occur in foot-and-mouth disease, variola, sheep-pox, hog cholera, measles, scarlet fever, rabies, trachoma, molluscum contagiosum, distemper of dogs, fowl pest and epithelioma contagiosum of fowls. As to the significance of such inclusions a variety of opinion exists, justly so in view of the fact that so little has as yet been done in the way of demonstrating their real import. It has been argued that they are merely an expression of abnormal conditions and also that they are the real organisms at the basis of the condition. It may be that in some cases they contain the organisms in greater abundance than any other portions of the body; the balance of opinion, however, seems to be that the inclusions are a result rather than the cause of the disease. Further than this it has been shown that transmission of most of these diseases takes place by an intermediate host such as the mosquito, the body-louse, etc. It has been suggested that in several of the tropical diseases there seem to be intermediate stages when the organism is visible as a protozoan form, and in other instances as a spirochete.

1. Wolbach: Boston Med. and Surg. Jour., 1912, clxvii, 419.

Here we have a distinct field for further research, for if such intermediate stages really exist in one case, it is quite likely that they exist in practically all of a similar type.

A final indication of a practical nature concerns quite recent advances into some of the more common diseases, as, for instance, measles and poliomyelitis. Recent work in physical chemistry has shown that minute substances — such, probably, as those with which we are here concerned — obey the laws of diffusion of gases when in the air, and of substances in solution in liquids. The prophylaxis of such diseases may then have to extend much wider than when the cause is a larger body, as in the bacterial or protozoan diseases. Although much has been done in the time since the work started, it is obvious that when the possibilities are considered, hardly the first faltering steps have been taken.

DRUGS, DIABETES AND THE LIVER

No one imbued with an adequate appreciation of the relative values of scientific evidence would venture at present to formulate a theory of the etiology of diabetes in the belief that it might afford a final satisfactory explanation of the manifold facts known in relation to the disease. At best we can to-day investigate carefully the clinical manifestations and the experimental analogies and attempt to supply for them a tentative, tenable hypothesis. Accordingly, as the symptoms thus become unraveled, one by one, and exhibited in their physiologic or pathologic significance, the interpretation of such abnormalities of metabolism is being slowly yet fundamentally evolved and brought closer to our understanding.

Diet has, of course, long occupied the conspicuous place in the therapeutic management of diabetes. It is well known, nevertheless, that there are drugs which appear to influence the intensity of the glycosurias in certain instances, so that the possibilities of drug therapy are now and then reverted to even by serious-minded clinicians, and medical literature is never free from claims made for some pharmacologic agent. One almost hesitates to discuss these with any seriousness under circumstances in which a fragment of truth may be snatched from its legitimate attachment and enlarged to fit some fraudulent assertion of commercial medication. A timely warning may not be amiss in advance of the reference which we wish to make to a proposed explanation of the antiglycosuric action of a few drugs that have been tested experimentally.

Among the classic modes of evoking glycosuria the *piqûre* or puncture of the roof of the fourth ventricle first suggested by Claude Bernard is familiar to every student. This unique attack on the lower nervous centers and its conspicuous result quite naturally led to the assumption of a close connection between the nervous system and diabetes, and the experiment has played a part in all theories advanced to explain the onset of the symptoms. In recent times research has shown that the adrenals presumably act as intermediators in the production of the attendant glycosuria. An excretion of sugar can readily be induced experimentally by injection of epinephrin preparations. Now the secretion of the adrenals has a familiar function in raising general blood-pressure through constriction of the arterioles by a local action on them. Observations of Neubauer[1] at the Vienna University clinic indicate that many agents which similarly raise general arterial pressure by a peripheral action on the blood-vessels may lead to glycosuria. Barium chlorid is instanced in illustration. Vasoconstriction and glycosuria are here concomitant. Those drugs, like chloral hydrate, alcohol, opium alkaloids, etc., belonging essentially to the group of narcotics and agents acting conspicuously on the nervous system (for which reason they were chosen in the earlier therapeutic schemes), may often check or diminish the *piqûre* glycosuria. They accomplish this by an effect directly the opposite of that discussed for epinephrin; for they produce a vasomotor paralysis and tend to lower arterial pressure. Their antiglycosuric effect is in no wise ordinarily due to an interference with the permeability of the kidneys for sugar.

A further analysis of this interrelation between drugs, blood-pressure and attendant glycosuria has disclosed the interesting and highly significant fact that the vasoconstriction is accompanied by marked hyperemia of the liver. Any intervention which will induce a transitory hyperemia of this organ along with a temporary stasis of the blood therein contained is likely to be followed by excretion of sugar. The immediate effects of the sluggish circulation of blood in the liver remain to be ascertained more exactly. In any event stasis of blood appears to be responsible for a conversion of glycogen in the liver and a release of an excess of sugar into the blood: simultaneous hyperglycemia and glycosuria.

The symptom-complex thus outlined is most significant. The hepatic overproduction of sugar appears here in the light of a local asphyxial response. This is not the first time that asphyxia and glycosuria have been found associated with each other. It is easier now to picture numerous hitherto inexplicable phenomena of glycosuria from a more general point of view. The nervous system may activate the adrenals to undue secretory response; the glandular agent liberated into the circulatory system may effect vascular changes expressed in general vasoconstriction and dilatation of the hepatic vessels at the same time. The liver cells appreciate the altered condition of the stagnant blood, and an undue pathologic transformation of glycogen into sugar begins. Much in all of this has been anticipated; but every effort to look at such complicated problems from new angles brings refreshing stimulation to the critical investigator. In the present instance we

1. Neubauer, E.: Ueber die Wirkung antiglucosurischer Mittel und über Leberglucosurie, Biochem. Ztschr., 1912, xliii, 335.

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have endeavored to focus attention somewhat more effectively on the liver as a contributory factor in the pathogenesis of glycosuria than is commonly done. The liver is admittedly the storehouse from which the wasted sugar makes its exit; yet the nature of the perversion which induces the striking upsets in its functions is only beginning to be revealed.

Current Comment

MULTIPLICATION OF ORGANIZATIONS A DANGER IN PUBLIC HEALTH CAMPAIGN

Never before has there been the amount of interest in public health matters that is manifested to-day, nor has the general problem of public health heretofore presented so many different aspects. As a result of the tendency toward system and the collection of data, there have come into existence, especially during the last ten years, a large number of organizations, local, national and special, which have taken up different phases of the health problem as their peculiar work. It is only when one attends some great gathering like the recent International Congress on Hygiene and Demography at Washington, and sees collected under one roof the results of the efforts of most of these bodies that one realizes their number and variety. We have just reason to feel proud of the large number of well-planned and well-managed philanthropic societies which are endeavoring to develop some part of the field of public hygiene. To the thoughtful observer, however, the present tendency suggests the need of caution against the danger of over-organization. In the business world the tendency is toward consolidation and simplification, rather than toward complexity and multiplicity. It would be well for those interested in the advancement of public health to keep this clearly in mind. An unnecessary organization, or two doing the work which might be done by one, can mean only wasted effort and money, or at least a higher cost of operation than is necessary. Existing organizations and the possibility of making some of them do a proposed line of work should be carefully considered before new associations are created, while the general tendency should be toward closer cooperation, consolidation and, when possible, amalgamation.

THE INFECTIOUS ABORTION OF CATTLE

The infectious abortion of cattle, a disease which has assumed a serious economic importance in many parts of this country, is now regarded as presumably caused by the same organism in America as that found in Europe. Certain information which has of late been gained regarding the bovine malady presents new problems in the domain of human pathology and sounds the warning of a possible indirect danger of the situation to the welfare of mankind, calling for serious consideration. It has been demonstrated that the abortion bacillus occurs in the milk of infected cows. Distinct lesions can be produced by the injection of such milk into healthy guinea-pigs, and the organism in turn can be recovered from animals thus inoculated. These facts have been attested by Professor Theobald Smith and his colleagues at Harvard and by the Bureau of Animal Industry in Washington.[1] The hitherto unsuspected pathologic lesions experimentally produced by laboratory inoculations are by no means confined to the reproductive organs, but especially affect the spleen, liver, bones, lymph-nodes and kidneys. The lesions are not unlike those produced by tuberculosis. They are not always followed by death. Paralysis of the hind quarters, blindness and enlargement of the lymph-nodes have been further occasional symptoms. These experiences, together with the finding of the abortion bacilli in milk, and the added fact that in cattle the most common means of infection is through the alimentary canal, make the possibilities of this organism as an etiologic factor in certain human infections loom up. It is accordingly important to appreciate that a reliable method of diagnosis of infectious abortion is now available by the application of agglutination and complement-fixation tests.[2] The perfection of such diagnostic procedures will make it possible to ascertain the incidence of the disease and will greatly facilitate the management of infected herds by isolation and disinfection. To this may now be added the probability of the successful development of a protective inoculation of animals against the infective abortion. Vaccines and immune serums will doubtless win a place for usefulness here as elsewhere in so many related fields. It behooves us meanwhile to watch the work of our veterinary colleagues and to consider most carefully its possible bearing on the health of man as well as on the economic features of man's food-supply.

INVESTIGATING HOT SPRINGS WATERS

A bill is before Congress providing for the investigation of the physiologic and therapeutic effects of the waters of the hot springs of Arkansas and the application of these waters to the alleviation and cure of diseases. As is known, these springs are on the government reservation; the government has assumed charge of the springs, issues licenses to bath-house keepers and has supervised the use of the water in other ways. Although exhaustive chemical analyses of the waters of the different springs have been made and their radio-activity has been inquired into, the physiologic and therapeutic effects of the waters have not yet been investigated scientifically. Physicians practicing at Hot Springs have found by clinical experience that the waters are undoubtedly beneficial in certain diseases, though to what the beneficial effects are due has never been determined. The chemical analyses indicate that the mineral constituents of the waters are probably of small or negligible value and that the good effects must be attributable to the heat and manner of use, or largely to the favorable hygienic regimen and medical treatment under which patients are placed while at Hot Springs. At any rate

1. Smith, Theobald, and Fabyan, Marshall: Ueber die pathogene Wirkung des Bacillus abortus Bang. Centralbl. f. Bakteriol., 1911, lxi, 549; Fabyan, Marshall: A Contribution to the Pathogenesis of B. abortus Bang. Jour. Med. Research, 1912, xxvi, 441; Bureau of Animal Industry Circular No. 198, March, 1912.

2. See the review by Surface, F. M.: Notes on Infectious Abortion in Cattle, Science, 1912, xxxvi, 409.

the government, since it has assumed responsibility and in a way endorses the use of the waters in the alleviation or cure of disease, should determine the source of the value of these waters, if they possess any. The American Medical Association placed itself on record, through a resolution passed in the House of Delegates at the Los Angeles Session in 1911, as favoring the scientific investigation of the mineral and so-called radio-active waters of the United States, and it is the intention of the Committee on Therapeutic Research of the Council on Pharmacy and Chemistry to further a study of this subject. The Association and THE JOURNAL therefore favor the passage of the bill before Congress. As the government stands sponsor for the use of these waters, it is under obligations to determine whether or not they are of real value in the treatment of disease. Some slight opposition to the proposed measure has arisen at Hot Springs, the reason assigned being the usual one, that an unfavorable report may hurt the town. A majority of the reputable physicians, bathhouse keepers and business men are in favor of the investigation. They feel that the value of the waters has been so well established clinically that an investigation could result only favorably.

ANTITOXIC SERUM AND THE CEREBROSPINAL FLUID

Recent experiments to determine to what extent antitoxin injected into the blood is transfused into the cerebrospinal fluid, are reported by French investigators.[1] Dogs were injected with antitetanic horse-serum, and forty-eight hours later the cerebrospinal fluid of the dogs was extracted blood-free. This fluid contained no trace of horse-serum, as was shown by the absence of precipitins. The fluid was only slightly antitoxic in its action on guinea-pigs inoculated with tetanus bacilli. Blood from the same dogs showed the presence of horse-serum by abundant precipitation, and was highly antitoxic, being capable of protecting 10,000 times its weight of guinea-pigs inoculated with tetanus. The experiment seems to prove that the amount of antitoxin transferred from the blood to the cerebrospinal fluid is practically negligible. These results confirm and at the same time explain the conclusions arrived at by clinical experience, that antiserum must be administered within the cerebrospinal cavity if any appreciable effect is to be obtained on infected meninges.

INDIVIDUAL DRINKING-CUPS AS CAMPAIGN LITERATURE

Public opinion moves rapidly and the innovation of yesterday is the commonplace of to-day. It is only a short time since the suggestion of individual drinking-cups was regarded as an advanced hygienic proposition. To-day they are not only accepted as customary in many parts of the country but in one locality, at least, they have been used as factors in the political game. The newspapers of Carthage, Mo., announce that one of the candidates for sheriff is giving a practical demonstration of his belief in the enforcement of sanitary laws. In his campaign for election he is using paper folding sanitary drinking-cups as campaign literature. Each cup bears a picture of the candidate and a statement of his candidacy. So far as we are aware, this is the first time that the individual drinking-cup has been used to promote politics as well as good health. The possibilities of this plan are almost unlimited and numerous elaborations will no doubt suggest themselves to our readers and to future candidates. It is encouraging to see the position of a candidate on sanitary questions made an issue in a political campaign.

1. Lemaire, H., and Debré, R.: Jour. d. physiol. et de path. gén., 1911, xiii, 233

EPIDEMIC DISEASES AND PUBLICITY

Communities in which epidemic diseases prevail sometimes attempt to conceal the facts. This short-sighted policy is adopted under the erroneous idea that concealment will do the community no harm and will prevent damage to business and other interests, but that knowledge of an epidemic will reflect on the community in various injurious ways. Buffalo and Los Angeles, during the past summer, have had epidemics of poliomyelitis; notwithstanding the unsatisfactory experience of San Francisco a few years ago in regard to the concealment of plague, a few misguided business men, politicians, and, unfortunately, a few physicians, opposed the efforts of the health departments in promptly suppressing the epidemic, wishing to resort to the old exploded method of concealment of conditions. Concerning this, *Public Health Reports* of September 20 has the following comment:

> During the course of the outbreaks in both Los Angeles and Buffalo there was an effort on the part of certain residents to belittle the importance of the epidemics and the active measures being taken by the health departments, with especial reference to the publicity being given regarding the presence of the disease and the number of cases occurring. However, in neither case did this prove a material embarrassment to the health authorities, who received the earnest support of both the practicing physicians and the citizens in general.
>
> The impression that publicity regarding such matters injures municipal interests is based on a fallacy. The existence of an epidemic cannot be concealed very long, and the absence of frankness in regard to the situation under these conditions produces a fear and suspicion that it takes some time to overcome.
>
> There is nothing that inspires so much confidence in the ability of a community to cope with a sanitary problem as frankness and honesty at all times in stating existing conditions. It shows that the community has the situation in hand and that it has sufficient confidence not to be afraid to inform others as to what is going on. The ethics of concealment of epidemic conditions is of course indefensible.

FULL-TIME TEACHERS IN MEDICAL SCHOOLS

Varying statements have been noted recently in regard to the number of full-time salaried teachers in the medical schools of this country. Some of these statements have doubtless been inspired by the requirement adopted by the New York Board of Regents about a year ago and now effective, that every medical school to be on the registered or recognized list in that state must have at least six instructors who are devoting all their time to teaching and research in the medical school. A recent statement[1] in regard to this requirement is to the effect

1. New York Med. Jour., Sept. 28, 1912, p. 646.

that "two years ago but fourteen medical schools could boast of such a number (six) of full-time instructors." This is hardly true. During the second tour of inspection of medical colleges completed by the Council on Medical Education in the spring of 1910, incomplete data secured showed that during the session of 1909-1910 at least thirty-six medical schools in this country actually had six or more full-time instructors and that at least fifteen colleges had more than fifteen such instructors. From more complete data secured by the Council on the third tour of inspection it was found that during the session of 1911-1912 at least forty-six medical colleges had six or more full-time instructors. The figures show that in the 117 medical colleges now existing there are at least eight hundred fifty full-time instructors, or an average of seven for each college. Of these full-time teachers 460 have professorial rank, which is an average of four for each college. There were thirty-two colleges which did not have a single full-time teacher. All this goes to show that the medical schools, as a rule, do not look on full-time teachers as an "ideal" but as an absolute necessity. It is also apparent that the New York Board of Regents was fully justified in its requirement that a medical college, to be recognized as such, should have at least six full-time instructors.

THE ATTACK ON MR. ROOSEVELT

The entire country has been shocked by the murderous attack on Mr. Roosevelt, made by a presumably insane Bavarian, who, after following his intended victim all over the country, finally found an opportunity of approaching him during his visit to Milwaukee. As announced in the daily press, Mr. Roosevelt was brought to Chicago by a special train on the night of his injury, and is now a patient in Mercy Hospital. The bullet was fired from a 38-caliber revolver. It passed through a heavy army overcoat, 100 pages of manuscript and a very heavy metal eye-glass case. It entered the body one inch below and one inch to the right of the right nipple, passed upward and inward for from four to five inches, and lodged, probably deeply, in the chest wall. There is no evidence of injury to the lung. THE JOURNAL, in common with the people of the country, without regard to partisan distinctions, extends its sympathy to Mr. Roosevelt, and its hopes for his speedy recovery.

ANOTHER LEAGUE NEEDED

Nebraska newspapers recently contained a news item of interest to stock-raisers and farmers. It was to the effect that many Nebraska farmers have been swindled by impostors selling worthless remedies for the cure of disease in horses and cattle. So serious has this abuse become that the state veterinarian and the governor have discussed ways and means of checking it. A Nebraska physician sends us one of these news items, together with an advertisement of some veterinary "patent medicines" and says:

I enclose two marked items—their relation is obvious. I hasten to urge on you the necessity of immediate action to establish a League for Medical Freedom for the protection of all horses, mules and jackasses against the domineering and monopolistic tendencies of veterinary surgeons.

Medical News

CALIFORNIA

San Francisco

Medical Building Remodeled.—The Leland Stanford Junior University, Department of Medicine, is said to be remodeling its medical building at a cost of about $35,000. The medical library has been moved into a new building and the space thus vacated is to be converted into laboratories. Additional space has also been provided for the out-patient clinics. The new library and the taking over of the properties of Cooper Medical College are to be commemorated the latter part of this month.

Personal.—Dr. Carl von Noorden of the University of Vienna spoke at a special meeting at the Los Angeles County Medical Association, October 9, on "New Aspects of Diabetes." ——Dr. Hugh Lagan, surgeon of the San Francisco fire department, was thrown from his buggy in a runaway accident, October 1, fracturing his left leg.——Dr. William F. Snow, Sacramento, president of the State Board of Health, has returned from Europe.——Dr. and Mrs. A. J. Zobel, San Francisco, have returned from Europe.

Prevention of Blindness.—At the semi-annual luncheon of the California Society for the Prevention of Blindness in San Francisco, September 17, a publicity campaign was discussed and the ways and means were considered which are necessary to further legislative action in the state. Dr. C. S. G. Nagel, president, urged those present to leave no avenue unopened that could lead to the things desired. Dr. Adelaide Brown made a strong appeal for the cooperation of medical and women's clubs throughout the state that proper legislative action might be obtained for the passage of the laws required. Dr. Milligan, superintendent of the Deaf and Blind Institute, Berkeley, advocated the support and influence to be obtained from publicity and the cooperation to be obtained from the lay press. Dr. Newell Perry spoke of the great necessity for the establishment of financial foundations to carry on any work successfully for the amelioration of those thus afflicted. Mr. Adolphus Graupner, who was also a director of the California Social Hygiene Society, narrated what had been done, stated what should be done and promised the cooperation of the Social Hygiene Society to assist and strengthen their efforts. Mrs. Andrew S. Rowan gave a general talk on what advertising has done to aid, and urged on those present the consideration of the pressing things of the future, that the benefits and blessings for which the society stands may be accomplished.

DELAWARE

Personal.—The Delaware Antituberculosis Society has selected Dr. Pendleton, Hartford, Conn., as resident physician of Hope Farm.——Dr. J. B. Merritt has been elected president of the Board of Health of Easton, Md.——Dr. E. E. Wolf has been appointed health officer of Wilmington.

State Society Meeting.—The Delaware State Medical Society held its one hundred and twenty-third annual session in Wilmington, October 7-8 and elected the following officers: president, Dr. L. A. H. Bishop, Dover; vice-presidents, Drs. Albert O. Robin, Wilmington, and Joseph M. Martin, Lewes; secretary, Dr. G. W. K. Forrest, Wilmington; treasurer, Dr. S. C. Rumford, Wilmington; trustee to the *Delaware State Medical Journal*, Dr. E. S. Dwight, Smyrna; delegate to the American Medical Association, Dr. H. J. Stubbs, and alternate, Dr. Albert O. Robin, Wilmington. The society recommended the removal of the state laboratory from Newark to Wilmington. It was decided to hold the next meeting of the society at Dover.

DISTRICT OF COLUMBIA

Naval Dispensary Moved.—The dispensary connected with the Bureau of Medicine and Surgery of the Navy Department has been moved from the Mills building to larger quarters at 703 Seventeenth Street. Arrangements have been made by which specialists connected with the Naval Medical School will be in attendance at the dispensary on certain days of each week.

The Social Hygiene Propaganda.—Washington people interested in the abolition of social ills met September 19 and organized a society to be known as the Society for Social Hygiene in the District of Columbia, to work in conjunction with the American Sex Hygiene Federation. The object of the association is educational. A series of lectures is to be given each year dealing with the subject of sex hygiene and eugenics.

ILLINOIS

Instruments Given to Hospitals.—The surgical appliances and instruments of the late Dr. D. W. Burlingame, Elgin, have been presented by his widow and daughter to the Sherman and St. Joseph's hospitals, Elgin.

Tent Colony Changes Name.—The sanatorium of the Lake County Tuberculosis Institution near Waukegan, heretofore known as the Tent Colony, changed its designation October 4 to the Lake Breeze Sanatorium. At present it has twenty-seven patients.

Personal.—Dr. Frank W. Blatchford, Winnetka, was seriously injured October 2 by being run over on cranking his automobile.——Dr. Charles W. Hunter, Oneida, who was operated on recently in Chicago, has returned home convalescent.

New Officers.—Fulton County Medical Society at Canton, October 1: president, Dr. C. D. Snively, Ipava; secretary-treasurer, Dr. D. S. Ray, Cuba.——The medical and surgical staff of Graham Hospital, Canton, October 1: president, Dr. E. W. Regan; secretary, Dr. Charles N. Allison.

State Board Sustained.—The Appellate Court has sustained the State Board of Health in the case of Frederick Leo Orsinger who asked a writ of mandamus commanding the board to issue him a license. In 1902 he was convicted of practicing without a license. On failure to pay the fine he went to jail, where he agreed to stop practicing medicine until he was licensed. Two years later he secured a diploma from the College of Medicine and Surgery in Chicago, but twice failed in the examination of the state board. He resumed practice, was again prosecuted and fined $200. He then instituted the mandamus proceedings and lost.

Chicago

Speech and Voice Clinic.—A clinic in defects of speech and voice has been added to the nose, throat and ear department of Rush Medical College.

Tag Day for Children.—More than $55,000 was obtained October 15, for the children's charities of the city through the efforts of thirty-seven hundred young women who sold nearly half a million tags.

Society Celebrates Silver Jubilee.—The twenty-fifth anniversary of the Scandinavian-American Medical Society at Chicago was celebrated October 10-11. On the first day, Dr. William Jepson, Sioux City, Iowa, spoke on "Uncertain Phases of Surgery," and Dr. A. J. Carlson of the University of Chicago, spoke on "The Movement of the Empty Stomach and Its Relation to Hunger." The proceedings of this day were presided over by Dr. Ludvig Hektoen. The second evening was given over to a dinner and dance.

Personal.—Dr. Fenton B. Turck has moved from Chicago to New York City where he has purchased a home at 14 East Fifty-Third Street.——Dr. and Mrs. William T. Gilman have returned from Europe.——Dr. Josephine Young has been appointed medical advisor for women for the junior and senior years in the University of Chicago and the School of Education.——Dr. P. B. Magnuson has been appointed chief surgeon of the Chicago & Alton Railroad.——Dr. William G. Todd celebrated his 91st birthday anniversary September 27.

INDIANA

Approves Clean Advertisements.—At a meeting of the Marion County Medical Society, October 1, resolutions were adopted commending the action of the Indianapolis *Sun* in eliminating from its advertising columns the announcements of medical practitioners engaged in objectionable practice.

Personal.—Dr. Charles Loomis, La Porte, who has been seriously ill at the Marion Hospital with arsenic poisoning, has returned home convalescent.——Dr. Charles Bowman, New Albany, who has been ill for several weeks, is reported to be convalescent.——Dr. A. P. Hauss, New Albany, was stricken with paralysis, September 27, but is reported to be improving.

Work Against Tuberculosis.—The Madison County Red Cross Association for the Study and Prevention of Tuberculosis was organized in Anderson, October 7.——The Grant County Association for the Study and Prevention of Tuberculosis was organized in Marion, September 30, and Dr. W. A. Fankboner, Marion, was elected president.——The antituberculosis fund canvas in Evansville has resulted in subscriptions of $12,115.36 or more than $2,000 in excess of the amount expected.

LOUISIANA

Sent to Leper Colony.—Dennis Foot, a negro, was held at New Orleans, on the arrival of an excursion train, October 8, by an inspector of the City Board of Health and, after examination, was committed to the leper colony.

Delgado Fund Divided.—The trustees of the Isaac Delgado Memorial Fund turned over $100,000 of the fund to the Charity Hospital, October 8. This money is to be used for the benefit of the hospital according to the wishes of Mr. Delgado.

Personal.—Dr. J. M. Daniel, Starhill, has succeeded Dr. W. H. Taylor, St. Francisville, as president of the Board of Health of West Feliciana Parish.——Dr. Adolph Henriques, New Orleans, has returned from Germany.——Dr. Harry E. Nelson has succeeded Dr. J. Browne Larose as house physician at the Hôtel Dieu, New Orleans.——Dr. John S. Thibaut, Donaldsonville, has resigned as a member of the Municipal Power Plant Committee.——Dr. John N. Thomas has been reelected superintendent of the Louisiana Hospital for the Insane, Pineville.——Dr. L. E. H. Duffel has been elected president and Dr. W. W. Pugh, secretary of the Napoleonville Board of Health.

MARYLAND

Loan for New Hospital.—The Board of Managers of the Eastern Shore Hospital for the Indigent Insane met in Baltimore, September 25, and decided to borrow $8,000 for the purchase of the Kirwan farm, near Cambridge.

Personal.—Dr. John Turner, Jr., has resigned as physician at the Gunpowder Dam Construction Camp, Loch Raven.——Dr. C. W. Whaland, Chestertown, has been appointed physician of Kent County.——Dr. William D. Campbell, Hagerstown, has succeeded Dr. J. E. Pitznagel as health officer of Washington County and city health officer of Hagerstown.

Baltimore

Death from Beriberi.—Of the seven patients suffering with beriberi who recently arrived on a vessel from the East Indies and were taken to University Hospital, one has died.

New Hospitals.—The trustees of the South Baltimore Eye, Ear, Nose and Throat Hospital plan an active campaign to raise funds for a new hospital building. For this $50,000 will be required, of which $10,000 has already been given by Mr. William Grecht.——The directors of the Union Hospital have opened an annex to the dispensary in the building formerly occupied as a maternity.

Personal.—Dr. David I. Macht has been elected president of the Union of Jewish Academicians of Baltimore.——The summer cottage of Dr. H. Warren Buckler at Jamestown, R. I., was destroyed by fire, October 6.——Dr. Germanus J. France was thrown from his motorcycle, October 10, sustaining a fracture of the clavicle and suffered contusions and lacerations.——Dr. Nathaniel G. Kierle celebrated his seventy-ninth birthday anniversary, October 10.——Drs. Lilian Welsh and Mary Sherwood have returned from abroad.——Dr. John Howland, director of the new Harriett Lane Home for Invalid Children, Johns Hopkins Hospital, has arrived in Baltimore.——Dr. William S. Gardner has been elected secretary of the Ohio Society of Maryland.——Dr. Arnold Klebs, Lausanne, Switzerland, read a paper on "The History of Variolation" before the Johns Hopkins Historical Club, October 14. He was entertained at dinner at the Baltimore Club by Drs. Thomas B. Futcher and Rupert Norton.

MISSOURI

Leper Leaves Hospital.—Emmons O'Dowd, the 22-year-old leper who has been a patient in the General Hospital, Kansas City, for several months, has disappeared and has, it is believed, started for Texas where his father resides.

District Association Organized.—The Sixth Missouri District Organization, representing sixteen counties of western Missouri, was organized in Kansas City, October 3. Dr. J. H. Owens, Sweet Springs, was elected president; Dr. Spence Redman, Platte City, vice-president, and Dr. George McC. Boteler, St. Joseph, secretary-treasurer.

Personal.—Dr. George P. Pipkin, superintendent of the Kansas City General Hospital, was operated on October 9 for appendicitis, and is reported to be doing well.——Dr. D. W. B. Kurtz, Columbus, was stabbed in the face and side, October 4, while trying to collect a bill.——Dr. E. L. Crowson, Pickering, was seriously bruised and fractured several ribs in a runaway accident, October 2.——Dr. William Rienhoff and family, Springfield, have returned from Europe.——Dr. G. W. McClure, Carterville, has been appointed first assistant surgeon in the Springfield Hospital, which is to be opened November 1.

St. Louis

St. Louis Physicians Hear Von Noorden.—Dr. Carl von Noorden of the University of Vienna addressed the St. Louis

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Medical Society, September 30, on "Treatment of Acetonuria." At the conclusion of his address an informal reception was tendered Professor von Noorden.

Personal.—Dr. R. B. H. Gradwohl has gone abroad.——Dr. Fred Kolbenheyer was attacked and assaulted by highwaymen, October 4.——Dr. H. Wheeler Bond has resigned as a member of the City Hospital Board.——Dr. Victor A. Bles has been assigned to duty at the Elgin (Ill.) State Hospital.

NEVADA

State Medical Society Meeting.—At the annual meeting of the Nevada State Medical Society held in Reno, October 8-10, the following officers were elected: president, Dr. M. R. Walker, Reno; vice-presidents, Drs. A. P. Lewis, Reno, and P. J. Mangan, Winnemucca; secretary-treasurer, Dr. M. A. Robison, Reno (reelected), and delegate to the American Medical Association, Dr. B. F. Cunningham, Reno.

NEW JERSEY

Sanatorium Dedicated.—Bonnie Burn Sanatorium, recently erected by Union County for the treatment of persons afflicted with tuberculosis, was formally dedicated October 12.

Personal.—Dr. Conrad G. Hoell, Camden, was injured in cranking his automobile and is confined in the Cooper Hospital suffering from three fractured ribs and internal injuries. ——Dr. George H. Balleray, Paterson, sustained a ragged cut of the retina during a hunting trip in Canada, September 15. ——Drs. James S. Breen, Elizabeth, Frank C. Ard and B. Van D. Hedges, Plainfield, have been appointed consulting physicians to the Bonnie Burn Tuberculosis Sanatorium, Elizabeth.——A banquet was given Dr. Samuel Korngut, Elizabeth, by the Working Mens' Building and Loan Association, October 1. Dr. Korngut is about to leave Elizabeth for Amsterdam, N. Y.——Dr. William H. Schmidt has been appointed physician to the poor in Atlantic City, vice Dr. Charles Bossert, resigned.

NEW YORK

Personal.—Drs. Paul Betewski has been appointed assistant surgeon at the State Soldiers' Home, Bath, vice Dr. Sanford H. Kinne, resigned.——Dr. Arthur Hinman, Syracuse, has been appointed assistant surgeon at the institution, vice Dr. Edward Tierney, resigned.——Dr. James G. Mumford has taken up his duties as superintendent of the Clifton Springs Sanatorium. ——Dr. Max Breuer, Buffalo, has returned from Europe.——Dr. R. H. Irish, Troy, has been elected a vice-president of the Lake View Sanatorium.

New Officers.—Fifth District Branch of the Medical Society of the State of New York at Oswego, October 3: president, Dr. Otto Pfaff, Oneida; secretary, Dr. F. H. Flaherty, Syracuse.——Third District Branch of the Medical Society of the State of New York at Troy, October 1: president, Dr. John B. Harvie; secretary, Dr. William Kirk, Jr., both of Troy (reelected).——Orleans County Medical Society at Albion, October 4: president, Dr. Richard Bamber, Carlton; secretary-treasurer, Dr. J. F. Eckerson, Shelby.——Madison County Medical Society at Oneida, October 1: president, Dr. H. H. Wilson, Stockbridge; secretary, Dr. G. W. Miles, Oneida.

Syracuse College of Medicine Opens.—The forty-first session of the College of Medicine of the Syracuse University began October 1 with a registration of thirty-four. The following changes in courses and instructors were announced: The creation of an independent department of bacteriology headed by Dr. Leverett Dale Bristol, New York City, formerly of St. Paul, Minn; the election of Dr. Earl V. Sweet as instructor in histology; the election of Mr. John R. Rice as instructor in the department of hygiene and preventive medicine and assistant in the municipal laboratory; the election of Dr. Albert G. Swift, New York City, as instructor in clinical surgery and the election of Dr. John W. Cox as instructor in pathology. A plan has been adopted by which each student shall have control of a special microscope which he shall own at the end of the course.——The contract for the new college dispensary has been let and work has commenced on the building.

New York City

German Physicians Sail.—The 220 German doctors, who made a sight-seeing trip as far west as Chicago after the International Congress on Hygiene and Demography recently held at Washington, sailed on the morning of October 9 for home. They gave a farewell dinner on board the Hamburg-American liner *Victoria Luise*, the night before, to which a number of American physicians were invited.

Free Medical Lectures.—By consent of the Board of Education, the auditorium of the Morris High School, The Bronx, has been placed at the disposal of the Medical Society of the Borough of the Bronx, every Tuesday evening in January, February and March, for free public lectures on medical topics, to teach the public as to the care of their health and prevention of disease and the lessening of human suffering.

Abuses of Medical Charities.—At a meeting of the Physicians' League of Brooklyn, September 27, an interesting discussion took place on the abuse of medical charities. On account of the varied trend of this discussion, a motion was unanimously adopted that the chairman appoint a committee to tabulate the more conspicuous abuses of charity and the most promising of the remedies suggested therefor. These are to be acted on serially at a meeting to be held October 18 at the County Medical Society's building.

Personal.—It is announced in the daily press that Dr. Alexis Carrel of the Rockefeller Institute for Medical Research has been awarded the Nobel prize, valued at $39,000, in recognition of his achievement in the suture of blood-vessels and the transplantation of organs.——Dr. Udo Wile has been appointed professor of dermatology and syphilology in the University of Michigan, Ann Arbor, vice Dr. William Breakey, resigned.——Dr. David Feiner, ambulance surgeon at the Williamsburg Hospital, was seriously injured in a collision between the ambulance and an ice wagon, September 25.

Pledge Bodies to Advance Science.—At the meeting of the Associated Physicians of Long Island which was held on Hofman Island on October 5, two hundred members endorsed a resolution whereby they agreed to give their bodies at death for autopsy for the advancement of medical and surgical science. The agreement made it clear that an autopsy was to be permitted in order to ascertain the cause of death but that the signers were not donating their bodies to the dissecting room. The object of this procedure is to educate the public in regard to the value of autopsy and to overcome the popular prejudice and morbid impressions of a large part of the public in regard to autopsies.

Sale of Loose Milk Restricted.—At the last meeting of the Board of Health a resolution was passed which will greatly restrict the sale of loose or dipped milk in this city. After June 1, 1913, it will be illegal to sell milk dipped from cans except under permits from the Board of Health, or in stores in which foodstuffs other than milk products are sold in the original packages only. It has been pointed out that many of the 14,000 places where dipped milk is sold are grocery stores where many other commodities are sold in a manner which necessitates much dust. The long period of time granted before the enforcement of this resolution is to enable small storekeepers to adjust their business to the new requirements.

Work of the Babies' Welfare Association.—This organization announces that the month of September closed with a record of approximately 570 fewer deaths of babies than occurred in the city a year ago. Up to September 29 there had been 11,167 deaths of babies under one year of age since January 1. October finds 17,000 babies still enrolled at the milk stations. Over 30,000 different babies have received milk and other treatment at the milk stations in the last four months. Letters have been sent out to the various organizations belonging to the association urging every effort to keep the stations open during the winter, as pneumonia and other cold-weather diseases may be almost as inimical to infants in the winter as are the diarrheal diseases during the summer.

Leper Without a Country.—The Hamburg-American liner *Allemania*, which arrived in this port on October 7, brought a Syrian woman 45 years of age who had been expelled from Port au Prince with her husband and five children because she was suspected to be suffering from leprosy. The woman came from Beirut some years ago to this country and she cannot return to her native country. The captain of the *Allemania* was compelled to take the family as they were threatened with hanging in Haiti unless he did so. Health Officer O'Connell does not know what to do with the case, and the Commissioner of Immigration is not able to help him since the case has not been turned over to the federal authorities. The woman and her family have been detained in the hospital on Hofman Island.

Large Gift to Columbia's Cancer Fund.—Under the will of the late Augustus W. Openhym an endowment has been established for research work into the cause, prevention and cure of cancer. While the amount of the gift has not been made public, it is said to be large. Mr. Openhym's will stipulates that if at any time further research work in this line is not required, the income of the fund may be used for

other research work in any branch of medicine or surgery which the trustees may determine. This fund will be added to the Crocker Research Fund which amounts to nearly one and one-half million dollars. In addition to this gift, the trustees announced that $4,300 had been received from other sources to further medical and surgical research. Of this sum Clarence H. Mackay gave $2,500.

PENNSYLVANIA

New Hospital Opened.—The new Nesbitt West Side Hospital, Wilkes-Barre, was opened for public inspection, October 7, and patients were received October 9. Mr. Nesbitt has already donated more than $30,000 for the hospital and this has given an excellent impetus.

Hospital Notes.—The officials of the Buffalo, Rochester and Pittsburgh Railroad have contributed $50,000 toward the construction of a new general hospital for Indiana County.——The Shamokin Hospital trustees have decided to convert the institution into a general hospital in order to secure a larger appropriation.

Small-Pox.—The city officials of Carbondale estimate that the expense to the taxpayers of the small-pox epidemic during the last two months will be $50,000.——The finance committee of the Pittsburgh Council has appropriated $10,000 for suppression of small-pox in that city.——Five physicians of Carbondale were arrested, pleaded guilty and were fined each $20 and costs for failing to make reports to the board of health of cases which they diagnosed as small-pox.

Beriberi Discovered on Ship.—When the British freight steamship *Venetia*, from Santiago, Cuba, which had been thoroughly fumigated by the government authorities at Reedy Island, arrived at the State Quarantine Station at Marcus Hook, October 12, two cases of beriberi were discovered on board. The officer in charge of the station is reported to have refused to allow the ship to come up to port until the seamen had been removed to the station hospital and the vessel fumigated a second time. [Query: When did beriberi become a contagious or infectious disease?]

Personal.—Dr. W. W. Richardson, chief physician of the Norristown Hospital, has purchased the Mercer Sanitarium and will assume charge this month.——Drs. Milton and Luba Robin Goldsmith, Pittsburgh, have returned from Europe.——Dr. Joseph Scattergood has been elected president and Dr. Charles E. Woodward, secretary of the West Chester Board of Health.——Dr. G. T. Matlack has been appointed chief attending surgeon and Dr. M. B. Ahlborn, assistant pathologist of the Wilkes-Barre State Hospital.——Dr. E. R. Walters, director of the Health Department of Pittsburgh, who has been ill with small-pox, is reported to be convalescent.——Dr. A. S. Jones, Girardville, has been elected permanent resident surgeon of the Trevorton, Shamokin and Mount Carmel State Hospital, vice Dr. C. B. Forcey, Shamokin, resigned.——Dr. Ernest Myers, Hollidaysburg, has moved to Saskatoon, Sask.

Philadelphia

Personal.—Dr. and Mrs. James A. Irwin have returned from Europe.——Dr. Frederick Smith is under treatment in the Medico-Chirurgical Hospital on account of a fractured leg.

German Internist in Philadelphia.—Prof. Dr. Herman Strauss of the University of Berlin, specialist on diseases of the stomach and intestines, delivered an address before the Northern Medical Association of Philadelphia, October 12.

Gift to the University.—At a meeting of the Mask and Wig Club of the University of Pennsylvania, October 10, it was voted to subscribe $5,000 to the trust fund of the university, the money to be given without any stipulations regarding its use.

Weir Mitchell Lecture.—The sixth of the Weir Mitchell lectures of the College of Physicians will be delivered October 21 in Mitchell Hall, by Dr. G. H. F. Nuttall of Cambridge, England, on "Some Recent Advances in Our Knowledge of the Mode of the Spread of Protozoal Diseases."

Tuberculosis Dispensary Opens.—The new Falls of Schuylkill branch of the Kensington Dispensary for the Treatment of Tuberculosis was opened, October 7, at 4058 Ridge Avenue. Clinics will be held Tuesday and Thursday afternoons and Thursday nights, under the direction of Dr. J. Willoughby Irwin.

For Clean Streets.—On October 7, the Street Cleaning Bureau started a campaign in South Philadelphia against littering the streets with waste paper, fruit skins and other refuse by providing galvanized cans for the deposit of such debris. Wagons will empty the cans several times daily and the bureau is distributing pamphlets, in English and Yiddish, emphasizing the dangers of dirty streets and urging the public's cooperation in keeping the streets clean. The district selected for the experiment comprises about eight blocks. Should the experiment prove successful, it is believed the scheme will be applied to the entire city.

Changes at the Medico-Chirurgical.—Dr. Seneca Egbert, dean of the Medico-Chirurgical College, announced, October 7, the following changes in the faculty: Dr. Stilwell C. Burns, professor of operative surgery, vice Dr. Mitchell P. Warmuth, resigned; Dr. Robert Boyer succeeds Dr. VanDuyne A. Sutliff as demonstrator in anatomy; Dr. L. N. Boston succeeds Dr. Howard F. Anders as professor of physical diagnosis; Dr. Herbert H. Boyer is appointed demonstrator of histology and embryology; Dr. John J. Gilbride is made demonstrator of surgery and Dr. Philip Fischellis succeeds Dr. A. C. Morgan as secretary and librarian.

WASHINGTON

Leper Quarantine Asked.—The U. S. Public Health Service has been asked by the authorities of Spokane to take steps to isolate the family of Antonio Valcone, in which, it is alleged, there are two cases of leprosy.

Personal.—Dr. A. T. Wanamaker, Seattle, returned from Vienna, September 21.——Dr. Frank Hinman, Spokane, who underwent operation September 9, is convalescent and expects to leave for Europe shortly.

WEST VIRGINIA

New Officers.—Ohio County Medical Society at Wheeling, September 16: president, Dr. James Schwinn; secretary, Dr. J. Edward Burns, both of Wheeling.——Barbour-Randolph-Mucker County Medical Society at Davis, September 4: president, Dr. H. K. Owens, Elkins; secretary-treasurer, Dr. G. C. Rogers, Piedmont.

WYOMING

Personal.—Dr. C. Dana Carter, Basin, has sold his practice and hospital to Drs. Herbert T. and George A. Harris, Basin, and Dr. Chester E. Harris, Chicago, and the new purchasers have incorporated the hospital with a capital stock of $18,000.——Dr. G. P. Johnston, Cheyenne, has started on a trip abroad.——Dr. Thomas G. Maghee, Lander, has been appointed superintendent of the State School for the Feeble-Minded.

GENERAL AND FOREIGN

Southern Medical Association Meeting.—The Southern Medical Association will hold its annual meeting in Jacksonville, Fla., November 12-14.

International Congress on Physiology.—The Ninth International Physiologic Congress is to be held at Groningen, the Netherlands, September 2-6, 1913.

Ohio Valley Practitioners to Meet.—The fourteenth annual meeting of the Ohio Valley Medical Association will be held in Evansville, November 14-15, under the presidency of Dr. L. D. Brose, Evansville, Ind.

New Railway Officers.—Association of Santa Fe Surgeons, annual meeting in Albuquerque, N. Mex., October 4-6: Dr. James K. H. Wroth, Albuquerque, president; Dr. M. L. Bishoff, Topeka, Kan., secretary (reelected).——Association of Erie Railway Surgeons, annual meeting in Chicago, October 8: president, Dr. J. G. Kelly, Hornell, N. Y.; secretary-treasurer, Dr. B. R. Wakeman, Hornell, N. Y.

Donations in Italy.—Prof. A. Murri of Bologna has presented the authorities with $40,000 (200,000 lire) the income of which is to be applied to the maintenance of the Rimini fresh-air sanatorium for children. Heretofore, for lack of funds, it has been open only during the warm weather.——The clinic at Milan for industrial diseases has received a donation of $10,000 from an Italian manufacturer living in Argentina.

The Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga prize, amounting to about $180, will be made July 14, 1913. Essays may be on any subject in medicine but cannot have been published and must be received by May 1, 1913, by the secretary of the college, Dr. Thomas R. Neilson, 1937 Chestnut Street, who will furnish further particulars, on request.

Southwest Medical Association Meeting.—The annual meeting of the Medical Association of the Southwest was held in Hot Springs, Ark., October 8-10 and elected the following officers: president, Dr. W. T. Wootton, Hot Springs; vice-presidents, Drs. W. B. Dorsett, St. Louis; E. H. Cary, Dallas, Tex.; J. H. Barnes, Enid, Okla., and C. C. Nesselrode, Kansas City, Kan., and secretary-treasurer, Dr. F. H. Clark, El Reno, Okla. The next meeting will be held in Kansas City, Kan.

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Maryland Bars Class C Schools.—At a meeting held recently by the Maryland Board of Medical Examiners a resolution was adopted that hereafter graduates from medical schools and colleges rated in Class C by the Council on Medical Education of the American Medical Association will be refused admission to the examinations of that board. It is stated that the Baltimore college which this decision particularly affects is the Maryland Medical College. Class C colleges, in the classification of the Council on Medical Education, are "those which require a complete reorganization to make them acceptable."

Infectious Diseases.—Three cases of bubonic plague were found October 1 on the ship *Bella Isle* which trades between Newcastle, N. S. W., and Hamburg. One of the victims died. ——A well developed case of yellow fever arrived at New Orleans October 8 on the British steamer *Chaucer*. The patient, a Greek, a member of the crew, shipped at Santos, Brazil. The patient was placed in the Marine hospital and the vessel was quarantined for six days.——According to public health reports cholera is epidemic in Japan, and orders have been given for the extra inspection of ships from Japanese ports.

Pellagra Meeting.—The second triennial meeting of the National Association for the Study of Pellagra was held in Columbia, S. C., October 1-4 and the following officers were elected: president, Dr. C. H. Lavinder, Savannah, Ga., U. S. P. H. Service; vice-presidents, Drs. J. F. Siler, Fort Sam Houston, Texas., Captain, M. C., U. S. Army, and Dr. C. C. Bass, New Orleans; secretary, Dr. J. W. Babcock, Columbia, S. C.; treasurer, Dr. J. A. Hayne, Columbia, S. C., and directors, Drs. J. J. Watson, Columbia, S. C.; P. E. Garrison, Washington, D. C., U. S. Navy; K. H. Beall, Fort Worth, Texas, and L. J. Pollock, Hospital, Ill. In the resolutions adopted at the close of the meeting, the association reiterated the belief, formerly expressed, that the ultimate cause of pellagra is unknown, but that, in view of the indictment against "spoiled corn," measures should be taken to provide an enactment to prevent its sale and consumption; that no satisfying evidence has been submitted to show pellagra to be directly transmitted from man to man; that it deems measures of quarantine and isolation unnecessary and unwise; that no specific remedy for pellagra is known at present, and that, recognizing pellagra as a matter of national importance, it hopes that Congress will appropriate sufficient funds for the continued extension of the work.

Bequests and Donations.—The following bequests and donations have recently been announced:

Winifred, Masterson, Burke Relief Foundation, New York City, in addition to real estate valued at four million dollars put in trust in 1902, has received the balance of the estate amounting to $2,435,281.

Charity Organization Society, New York City, $100,000; New York Association for the Relief of the Ruptured and Crippled, $5,000, and the New York Association for the Relief of the Destitute Blind, $10,000, by the late Mrs. Helen Marie Theresa Holly, Stanford, Conn.

Robert Packer Hospital, Sayre, Pa., $25,000 from Mrs. Mary Packer Cummings, Mauch Chunk, for a children's ward to contain eighteen beds and six private rooms.

St. Mary's Hospital, Amsterdam, N. Y., $2,000 from Hon. Stephen Sanford.

Fresh Air Fund of the Pennsylvania Industrial Home for Blind Women, Philadelphia, $1,000, and Presbyterian Hospital, Philadelphia, $10,000 to endow free beds in memory of Frances F. Wolgamuth and Elizabeth H. Wolgamuth, by the will of Sarah J. Wolgamuth.

St. Joseph's Hospital, Philadelphia, $12,500 by the will of Isabella McLinden.

Presbyterian Hospital, Philadelphia, a contingent bequest of $5,000 by Mrs. Emma P. Campbell.

Nathan Littauer Memorial Hospital, Gloversville, N. Y., $1,000 by Lucius N. Littauer.

German Deaconess Hospital, Buffalo, $5,000 from Christine Bernhardt and Mrs. Seibel Groben for the endowment of private rooms.

Other Deaths Abroad.—From Cuba comes the news of the shooting of Dr. G. Rijo by a highwayman. Bandits in Cuba hitherto, it is said, have always respected the life and property of medical men, and the *Prensa Medica* comments on this tragedy as a sign of the times. Dr. Rijo was vice-president of the Colegio Medico de Cuba.——The *Policlinico* relates that Dr. Fridenschtein of Odessa had been treating for some time a workingman with syphilis, and the latter wearying of the tediousness of mercurial treatment, Fridenschtein proposed a change to salvarsan. Two days after the injection of salvarsan the patient had great local pain and felt much worse generally so he accused the doctor of having poisoned him and returned and shot the physician dead.——Sir William Japp Sinclair, J. P., professor of obstetrics and gynecology in Victoria University, Manchester, England, died August 21, aged 66. He qualified as M. B., C. M., at Aberdeen, Scotland, in 1873. In 1874 he settled in Manchester and in 1888 was appointed professor of obstetrics at the university. For many years he was connected with the editorial conduct of the *Journal of Obstetrics and Gynecology of the British Empire*. He took an active interest in the political life of Manchester, for nearly twenty years was chairman of the South Manchester Liberal Unionists Association, and from 1893 to 1897 served as a member of the city council. He was knighted in 1904.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Oct. 5, 1912.

The National Insurance Act

The struggle between the profession and the government with regard to the conditions of medical benefit under the national insurance act is rapidly approaching a crisis. It may be remembered that at the recent annual meeting of the British Medical Association the representatives decided to break off negotiations with the government, because their demands had not been granted. In order to prevent the government from getting out of the difficulty by handing over the administration of medical benefit to the friendly societies the British Medical Association has obtained from the majority of the physicians of the country holding friendly society appointments their conditional resignations, to be sent in at the end of the year if the association so decides. Already the breaking out of hostilities has been signalized by the sending in of the resignations of over 10,000 physicians in various localities. In these places contract practice therefore absolutely ceases at the end of the year, unless physicians can be imported to take it up, which is extremely improbable.

Provisional regulations for the administration of the act have been issued by the insurance commissioners. Those dealing with medical attendance, while leaving unsettled the main question of dispute with the profession, are, on the whole, satisfactory to the profession. They require that a physician shall give such treatment as can in the best interests of the patient be undertaken by a practitioner of ordinary professional competence and skill, excepting confinements and tuberculosis. For the latter special arrangements, including sanatoriums, are made. When the condition of the patient is such as to require services beyond the competence of an ordinary practitioner, the latter shall advise the patient as to the steps to be taken in order to obtain such treatment as his condition may require. The physician shall be required to visit the patient within a distance of three miles by road of his residence. He shall also attend and treat patients at places specified for the purpose on such days and hours as are specified. He shall order in a form provided for the purpose such drugs and appliances as are requisite for the patient other than those which he may be under an arrangement to supply. All treatment shall be given by the physician personally except when he is prevented from doing so by urgency of other professional duties, absence from home or other reasonable cause. He will provide that when he is so precluded some other physician will act as his deputy.

Persons in receipt of medical benefit must obey the instructions of the physician, and not conduct themselves in a manner likely to retard recovery or to make unreasonable demands on the physician. Whenever their condition permits they must attend at the office or place of residence of the physician on such days and hours as he may appoint. They shall not summon the physician between certain hours (to be fixed) except in case of serious emergency. When requiring to be visited at home they shall give notice to the physician before a certain hour (to be fixed) on the day. A fine may be inflicted on any insured person who breaks any of the regulations or is guilty of any imposition in respect of medical benefit and in the case of repeated breaches medical benefit may be suspended for periods not exceeding one year.

Under the insurance act an advisory committee, consisting of physicians including representatives of the British Medical Association and of the friendly societies was appointed to advise the insurance commissioners in the framing of regulations. When the British Medical Association decided to break off negotiations it requested all the medical representatives to withdraw. Those representing the association and the majority of the other physicians withdrew, but seventeen medical men including Sir Clifford Allbutt, declined to do so, as they thought the best interests of the profession, as well as of the insured, would not be served by depriving the commissioners entirely of medical advice. These medical representatives formed a deputation to Mr. Lloyd-George, the Chancellor of

the Exchequer, requesting him to provide further funds to increase the medical remuneration. They submitted several points in the public interest, which appeared to them to justify this. The chancellor said that these points would receive the careful attention of the government and expressed his sense of the great public service which had been rendered by the medical members of the advisory committee in continuing their work. Afterward he received a deputation from the members of the committee representing friendly societies. He explained that the government must soon come to a decision whether any increased provision should be made for meeting the cost of medical benefit. Although for securing the hearty cooperation of the medical profession in the provision of an efficient medical service it might be in the general interest to provide more money, there must be a limit to what the country could reasonably be expected to find. It was conceivable that when the government had done their best they might fail to induce the profession to work the act. Two alternatives are open. The first is for the government to hand over to the friendly societies the money provided for medical benefit under the act and leave them to make their own arrangement with the physicians. The second is for the government to organize a national benefit service of whole-time physicians. The meeting was almost unanimously in favor of the latter and was strongly adverse to any more of the money provided by the insurance act being paid to the physicians. Thus at the last, the struggle is between the profession and the societies rather than between the profession and the government.

Plague on the Tyne

A fatal case of plague has occurred on the river Tyne. The patient, an apprentice on board a steamship which arrived from Hamburg, was taken ill and sent to the floating hospital as a case of typhoid fever. On the following day the port health officer suspected that the disease was plague. Examination of the patient's blood showed that it contained the plague bacillus. The boy died and the necropsy confirmed the diagnosis. No further cases of plague have developed, and every precaution has been taken against infection.

New Laboratories at Charing Cross Hospital

At Charing Cross Hospital the Huxley lecture will be delivered by Prof. Simon Flexner of New York, October 31. His subject will be "Recent Advances in Science in Relation to Practical Medicine." On the same day extensive new laboratories of public health and bacteriology will be opened. They include a large class-research laboratory, professors' and lecturers' laboratories for public health and bacteriology, preparation and animal rooms and a large theater and library.

The Treatment of Tuberculosis

A model scheme for the treatment of tuberculosis has been drawn up by the state sickness insurance committee of the British Medical Association. It has been explained in previous letters that under the national insurance act, which makes special provision for the treatment of tuberculosis, a number of tuberculosis officers will be appointed to devote their whole time to the diagnosis and treatment of the disease. The opinion is strongly held in the profession that the more physicians there are who are interested in the treatment of tuberculosis the better. It is felt that at this time of constant multiplication of officials the result will be a bad effect on the profession generally. The object therefore of the model scheme is to enlist to the fullest extent the services of the ordinary family physician. As to the permanent staff, it is suggested that the chief tuberculosis officer shall devote his whole time to administrative duties and receive not less than $2,500. In a large district he may be assisted by one or more whole-time officers at a salary of not less than $15,000. A person applying for treatment is first to present a statement signed by a physician for which a fee of 25 cents is to be paid. If the patient has no physician he must choose one in his neighborhood, obtain a form, take it to the doctor, and ask him to examine him and fill out the form. The fee for this is to be $1.25. The form of treatment—domiciliary, sanatorium, dispensary or hospital—should be decided by the chief tuberculosis officer, in consultation with the patient's private physician, and the treatment should be carried out where possible by the latter in cooperation with a tuberculosis officer, except where the patient is transferred to a sanatorium or similar institution. Patients so transferred should on their discharge be referred to the private physician with a report of their progress. In the case of domiciliary treatment the private physician and the chief tuberculosis officer are to decide in consultation as to the treatment and the number of visits likely to be required. The committee considers that in dispensary treatment the work should be diagnostic, consultative, bacteriologic and statistical in character, and in general should be carried out at the homes of the patients or at the doctors' offices, but certain special forms of treatment may, with the consent of the physician concerned, be given at the dispensaries. No patient should be seen at the dispensary except on the recommendation of a private physician.

Quack Remedies in Australia: Protection Extraordinary

At present, while the American public is discussing the evils of protection and asking the pertinent question, Who pays? the following extraordinary example of protection in the antipodes may be of interest. In the Australian federal house of representatives the attention of the Minister of Customs was drawn to the fact that analysis of an advertised cure for cancer showed that it consisted of 24 per cent. starch, 75 per cent. water and a little borax. At the price of 36 cents it was advertised as: "A remedy for the world. Cure for blood-poisoning, pleurisy, pneumonia, erysipelas, all inflammations, typhoid and other fevers, and cancer in its various forms." Asked if he would take steps to prevent its sale the minister replied that if the article was imported steps would be taken to prevent its introduction, but that if it was manufactured in Australia no action could be taken until the people gave the government the necessary power. The federal government could not prevent the sale of such goods, but the Department of Trade and Customs had prevented thousands of such quack remedies coming into Australia during the last two or three years.

Insanity in Ireland

The report of the Inspector of Lunatics in Ireland for the year 1911 has just been issued. The number of lunatics in asylums was 24,655, an increase of 261 over the number of the previous year, when the increase was 250. But the increase for 1911 was sixty-one less than the average increase for the preceding ten years. The number of insane in asylums has increased from 250 per hundred thousand of the population in 1880 to 563 in 1911. These figures must not be taken to represent an increase of insanity in the country to this extent. For owing to improvement of administration and increased confidence of the public, many lunatics are sent to asylums who in former years would have been kept at home. With regard to the question of alcoholism as a cause of insanity the report makes the remarkable statement that the facts indicate practically no relation between the distribution of insanity and drunkenness in Ireland. Chronic alcoholism is so rare in the country that it can have no great influence on the insanity rate.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, Sept. 27, 1912.

Crime in France

The report on the administration of justice in the criminal courts for 1910 gives interesting information concerning the status of crime. On the whole, great crimes are not on the increase. During the last ten years they have decreased as compared with the twenty years preceding; the difference between the average number around 1880 and that around 1900 is 36 per cent. (a yearly average of 3,446 convictions, 1876 to 1880, and of 2,174 between 1901 and 1910). The decrease is especially marked in crimes in connection with property, 1,231 being the mean between 1896 to 1900; 998 between 1901 and 1905, and 967 between 1906 and 1910. Crimes against persons have increased, the annual mean being 1,217, 1,100 and 1,285 in the three periods, respectively.

A large proportion of criminals are young persons; in 1910, 36 per cent. of the accused were minors; of 3,144 accused there were twenty less than 16 years old, 115 from 16 to 18, and 388 between 19 and 20; there were 1,108 between 21 and 29, 800 between 30 and 39, 405 between 40 and 49, 207 between 50 and 60, and 101 older than 60 years.

If the population of France is regarded as being divided into groups according to ages, and the prisoners convicted in the courts for the trial of misdemeanors are compared with these groups, no doubt can remain as to the predominance of crime among young persons. This proportion holds for women as well as men between the ages of 18 and 21, though the proportion among the young women is not so great as that among the young men. There are 301 men in jail between the ages of 18 and 21 for each 10,000 of male population of the same age. The proportion of women of the same age is 42 to 10,000, and of all adults above 21, 17 per 10,000.

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As to education, of 3,144 criminals in 1910, 316 were illiterate, 2,666 could read and write, and 162 had received better education.

Encroachments of the Red Cross

Physicians are complaining because the Red Cross is encroaching on their field. The matter was discussed at the recent general meeting of the Syndicat des médecins of the Department of the Var. While admitting that the members of the Red Cross should be given the instruction which would enable them to do their work in time of war, the syndicat felt that the precise method and limits of this instruction should be marked out. As the fundamental idea of the Red Cross is that its members should take care of soldiers in the military hospitals or field hospitals, and under the direction of the army surgeons, the instruction of the Red Cross attendants should be in the hands of the army surgeons. A diploma is not needed; a letter of service given by the military authorities for a stated training is sufficient. Physicians would then have no occasion to fear illegal practitioners armed with diplomas showing that they are qualified hospital attendants.

Pharmacists and the French Pharmacopeia

A misrepresentation of the law concerning fraud has led to the erroneous impression that pharmacists were not permitted to keep in their laboratories any other preparations than those specified in the latest pharmacopeia, that of 1908. As a result it was maintained that pharmacists could not compound and keep Sydenham's laudanum after the formula of the pharmacopeia of 1884, which amounted to its being impossible for physicians to prescribe it, as several days are required for its preparation. The minister of agriculture has put an end to this extraordinary interpretation of an ambiguous law. Hereafter it will not be an infraction of the law if a pharmacist keeps other substances than those named in the latest pharmacopeia, but pharmacists must observe the following regulations:

1. Every substance designated by the name alone which it bears in the official pharmacopeia shall conform absolutely to the conditions therein laid down.

2. Every preparation defined in the pharmacopeia but compounded according to a modified formula must bear on the label the indication of this modification, thus: elixir of paregoric (1884 pharmacopeia); tincture of hyoscyamus (1884 pharmacopeia). Pharmaceutical preparations compounded according to the recipes of foreign pharmacopeias must be labeled with the name of the pharmacopeia or have the composition of the preparation indicated.

The Number of Cadavers Dissected

In nine months, from Nov. 1, 1910, to July 31, 1911, 2,204 cadavers (980 men, 552 women and 672 children) were turned over by twenty-eight Paris hospitals to students for dissection. About two-thirds were used in the Ecole pratique of the Faculté de médecine and the remaining third in the Clamart amphitheater, which was founded especially for interns and externs of the Paris hospitals. For several years the supply of bodies has not been sufficient for the teaching of anatomy. From 1908 to 1911 the number of cadavers used has varied between 2,140 and 2,200; for the preceding years the mean was 2,500, and in 1907 the number reached 2,682.

The Skull of Descartes

At the last meeting of the Académie des Sciences M. Darboux, the permanent secretary, presented some interesting details which were revealed in letters that passed between Berzelius and Berthollet, published recently at Stockholm. The remains of Descartes were received in France in 1667 minus the head, which remained in Sweden until 1821, when the skull was offered to the Académie des Sciences by Berzelius through Berthollet. The academy received the gift with due respect, according to Berthollet, examined the skull, compared it with a portrait and declared it genuine, or appeared to accept it as such. The correspondence recalled happenings long since forgotten, and a search was made for the skull. M. Dehérain, librarian of the Institute of France, found in the first volume of the *Journal de zoologie* an account of the skull of Descartes having been placed in the museum. But search has failed to bring it to light. In the collection of Gall a note has been found concerning the skull a mold of which had been studied by the celebrated phrenologist, and on the margin it was stated that the skull had since come to the museum. It is supposed that the skull was in the collection which was scattered by the flood of 1910, in which case a long search will have to be made to rescue it from the confused assortment to which the collection was reduced.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, Sept. 28, 1912.

Personal

Priv.-Doz. Dr. Bielschowsky of Leipsic, a pupil of Professor Sattler, has been selected successor of the late Professor Bach, as director of the Marburg eye clinic.

The Institutes of the Kaiser Wilhelm Society for the Advancement of Science

The Kaiser Wilhelm Society, founded a few years ago, plans to begin at once the building of an institute for experimental therapy at Dahlem near Berlin, which will be conducted under the direction of Professor Wassermann. Here are to be undertaken in a systematic way, under the direction of Professor Rubner, physiologic investigations of the influence of bodily and intellectual labor of man. The institute for general, physical and electrochemistry is to be dedicated on October 23.

National Insurance and Physicians

The statements made by the representative of the local Krankenkassen at the general meeting of the state-aided insurance societies of Germany, regarding the work and fees of the insurance physicians (with reference to which I have reported in a previous letter), are partly corrected in the last number of the official journal of the medical union (*Aerztliches Vereinsblatt*). According to this, the expenses of medical treatment in 1885 were not 4,000,000 but 10,000,000 marks. Moreover, in the meantime the number of members of the insurance societies has increased from 4,500,000 to 13,000,000. In addition, if it is considered that in the same time the number of members of the insured families has remarkably increased, the total of the insured persons must be estimated at 23,000,000. Also the reported increase in medical fees from 2.13 marks ($.50) per capita in 1885 to 5.85 marks ($1.45) in 1910, as reported by the representative of the Krankenkassen, is incorrect, because on the basis of 23,000,000 of insured the annual per capita fee was only 3.32 marks ($.83).

The Number of Insane in Saxony

The number of insane is notably increasing. In 1897 there were in the kingdom of Saxony 7,033 insane cared for. In 1910 there were altogether in the asylums 14,542 patients of this character, which means more than a doubling of the number in thirteen years. During the same period the number of institutions in which the insane were cared for rose from thirteen to twenty-three. In 1910 there were in the institutions 9,444 beds, and the number of days of care was 3,339,073. Among those admitted both sexes were almost equally represented. With the increase of the numbers in the asylums the fact must not be left out of account that certain classes of patients are now admitted who were formerly left at large.

Sanatoriums for the Army

With two exceptions all the corps of the German army have sanatoriums for their use, in which provisions are made by the military authorities for the treatment of the common soldiers. Within the jurisdiction of the Prussian army authorities alone, there are forty-one such sanatoriums, including those at Aachen, Ems, Kreuznach, Nauheim and Wildungen. Within the jurisdiction of the Bavarian, Saxon and Wurtemberg army authorities there are altogether twenty-one such institutions. The largest sanatoriums are at Kissingen and Brückenau. Outside of the health resorts mentioned, the military authorities maintain sanatoriums in foreign countries, at Marienbad and Karlsbad, of which the first is open to members of all German corps; and in Teplitz there is a Prussian military hydropathic institute, as well as a Saxon hydropathic hospital (Badelazarett). Independent of the watering places so far mentioned, there are twenty-one sanatoriums designated for the reception of Prussian and Wurtemberg soldiers in the incipient stage of tuberculous disease of the respiratory organs.

Suicides in Germany

Suicide as a social phenomenon among the masses shows the same regularity as births, marriages and deaths. An especially striking phenomenon is the regularity in the increase of suicides. The number of suicides in Prussia has risen since 1878 from 180 to 207 for a million of population. Within the empire of Germany, the number of suicides in Prussia takes a medium position. In this respect Prussia is exceeded by states outside of Germany: by France with 238; Switzerland with 228 and Denmark with 220 per million of inhabitants; while the number of suicides is 55 in Norway; 90 in England; 29 in Ireland and 20 in Spain.

Miscellany

Injection of Alcohol for Relief of Disturbances in Swallowing with Laryngeal Tuberculosis.—F. Bértran y Castillo describes in the *Siglo Medico*, 1912, lix, 594, his extremely favorable experiences in six cases with injection of alcohol to deaden the superior laryngeal nerve and thus put an end to the dysphagia. He found the P. Boncour technic preferable; first 1 c.c. of a 1 per cent. solution of novocain and epinephrin is injected, followed after five minutes by injection of 90 per cent. alcohol, unheated. The needle used is 4 cm. long and it is introduced in the median part of the neck, at the center of a vertical line connecting the projection of the thyroid cartilage with the convex portion of the hyoid. When the needle has pierced the skin and muscle, there is a sensation as if it were in an open space; this is the small serous bursa described by Boyer. Once past this, the needle encounters the tough thyrohyoid ligament. The needle is then directed horizontally backward and outward, parallel to the upper margin of the thyroid cartilage, half a centimeter above it, following this direction for about 2½ cm. the patient suddenly experiences a sharp pain radiating to the ear, the signal that the nerve has been reached. The advantages of this technic are that there is little danger of injuring blood-vessels as they lie back of the nerve as a rule, while the nerve is more directly accessible and the injection can be made on both sides without withdrawing the needle as the point can be turned to reach the nerve on both sides. He describes six cases in which he applied the Hoffmann technic but found it extremely painful while the anesthesia induced lasted only for a very few hours or days. With the above Boncour technic the anesthesia averaged twenty days up to a month's duration, and the nerve could be blocked thus repeatedly as needed. The experiences of others in this line are reviewed.

Dairy Products in the Tropics.—It has been found difficult to maintain dairy animals in hot countries, consequently these regions are not plentifully supplied with dairy products except in the form of condensed milk, evaporated cream and tinned butter. In Hongkong, according to the *Scientific American*, a dairy was established twenty-five years ago but was operated for fifteen years without profit. The herd was completely wiped out three times before a successful method of feeding could be evolved. This problem has been solved by feeding the cows partly on Guinea grass, a native growth, and the fodder of other sorts from temperate latitudes. The herd now consists of over 450 head of the best milking strains and the dairy is on a dividend basis of about 18 per cent. In the Philippines a large tract of land about twelve miles from the city of Manila has been set apart for dairying purposes and cattle are being imported from Australia. The enterprise is under government supervision. A dairy is also being established at Singapore. One of the great problems in the tropics, aside from the difficulty of feeding the cattle, is the prevention of disease among them. After long experience at Hongkong, disease is largely prevented by a rigid system of quarantine and stall feeding of the cattle. Visitors from other parts of the island on which Hongkong is situated, or from China, are not allowed access to the herd except under the strictest precautions against the carrying of disease. The employees are required to change their clothing before entering or leaving the premises and the cattle-sheds are screened against disease-bearing insects.

Angioneurotic Eruption Due to Acetylsalicylic Acid.—H. B. Anderson (*Canadian Pract. and Rev.*, September) cites two such cases. The first was that of a woman aged about 40, who had suffered from acne rosacea with slight digestive disturbance and constipation, but who was otherwise quite healthy. She had exhibited a peculiar susceptibility to many drugs, such as quinin, atropin and morphin. She contracted a mild attack of influenza with slight fever, malaise and pains. Bearing her drug idiosyncrasy in mind, Anderson prescribed acetylsalicylic acid (aspirin) in 5-grain doses. After taking the first dose she became nervous; pulse was rapid, and she felt very weak. Following the second dose, the patient's face and lips swelled, with irregular swellings of the type of an angioneurotic edema over the extremities at the same time. The drug was discontinued and the symptoms disappeared within the next twenty-four hours. The second case was a similar one. The administration of acetylsalicylic acid in 5-grain doses was promptly followed by a marked generalized urticarial eruption. The itching was intense, the lips swollen and the face so swollen as to close the eyes. The cutaneous manifestations were accompanied by marked general depression, nervousness and discomfort. The patient immediately recognized an effect similar to that experienced when the drug was taken on previous occasions. The drug was promptly discontinued and the eruption gradually cleared up within a couple of days.

Carbon Tetrachlorid as a Solvent.—Carbon tetrachlorid has been adopted as a solvent in industrial extraction processes as a substitute for benzin and has given excellent results in certain cases. One of its chief advantages is its lack of inflammability and danger of explosion which has made it particularly useful in dyeing and cleaning establishments. It is a definite chemical compound having the formula CCl_4 and is completely volatile without imparting any odor to the material on which it is used. It dissolves fats and oils readily and does not leave a ring or halo as does benzin. It has a lower heating point than the petroleum fractions generally employed and a higher specific gravity and, therefore, like carbon disulphid, has the advantage of being heavier than water. It is somewhat more expensive than benzin and the loss in extraction processes is greater. C. Baskerville and H. S. Riederer (*Jour. Indust. and Eng. Chem.*, September, 1912) have made some studies of the solvent properties of carbon tetrachlorid on asphalts, bitumins, etc., cellulose acetates and nitrates, rubber, alcoholic gums, water gums, shellac, rosin, waxes of various kinds and fats. The results of their tests show that it has rather limited use as a solvent for these substances except in the case of the fats and oils, camphor and waxes. Tables are given of the solubility of various inorganic substances in carbon tetrachlorid.

Sterilizing Water in the Pipes.—As is well known, distilled water is undesirable and unpalatable for drinking purposes on account of the absence of soluble gases, which renders it flat and tasteless. J. L. Sammis (*Jour. Indust. and Eng. Chem.*, September, 1912), says that the possibility of pasteurizing water for drinking purposes as it flows from the pipes has attracted little attention. He describes a method applied to the water system by which water flowing through a small pipe can be momentarily heated to 79 to 82 C. by which means disease germs, such as those producing typhoid fever and dysentery, etc., are destroyed while the water is under pressure and it does not lose its dissolved gases or palatability. The water then can be quickly cooled in the pipes by means of a cold water jacket. Only a small proportion of the water used in a building would require heating for drinking purposes but the entire quantity for all purposes could be run through the jacket to aid in cooling the water. This would be desirable anywhere but especially so where the water-supply is known to be contaminated. The method can be used in office buildings, factories, schools, etc., where steam pressure is maintained throughout the summer. The amount of steam required is small. An illustration of the heating coil and the cooling apparatus as connected with the steam and water pipes is given in the article.

Germans Test Dairy Products.—The German Agricultural Society arranges annual ocean voyages in connection with expositions, for the purpose of testing the stability of dairy and other food articles which are intended to keep for prolonged periods in all sorts of conditions. The voyage takes four months, going from Bremen to Australia and back, crossing the equator twice. On their return the goods are tested in Bremen by judges and scientists.—*Creamery and Milk Plant Monthly.*

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Marriages

GEORGE WILMER YOURTEE, M.D., to Miss Laura Eleanor Hightman, both of Burkettsville, Md., September 25.

ALFRED HARRIS KELLY, M.D., Louisville, Ky., to Miss Aimee Lucille Gunn of Breckenridge, Colo., September 19.

WILLIAM H. ROBERTS, M.D., Sheridan, Wyo., to Miss Lillian Harris Wright of Moundsville, W. Va., August 28.

JACOB C. MOYER, M.D., Hazleton, Pa., to Miss Jessie Marguerite Birkbeck of Freeland, Pa., September 1.

WINTON MARKWOOD NIHISER, M.D., Hagerstown, Md., to Miss Flora E. Lapp, at Baltimore, October 2.

MAXWELL BRANNER, M.D., New York City, to ANNA JANE SCOTT, M.D., of Kansas City, Mo., recently.

JOHN HENRY EVANS, M.D., to Miss Camille Margaret Boileau, both of Chicago, September 23.

NORMAN B. SHEPLER, M.D., Harrisburg, Pa., to Miss I. Corinne Gaul of Philadelphia, October 2.

FLOYD OLIN SMITH, M.D., Des Moines, Iowa, to Miss Bessie Heath of Hopkinston, Iowa, October 5.

JOSEPH M. WEAVER, M.D., Allentown, Pa., to Miss Frances P. Jones, at Baltimore, September 25.

ORVILLE NALLE, M.D., Elkwood, Va., to Miss Arabella Bowling Hurt of Culpeper, Va., October 2.

LLOYD PARKER SHIPPEN, M.D., to Miss Florence Hawley Brush, both of Baltimore, October 2.

ARTHUR IRWIN MURPHY, M.D., Pittsburgh, to Miss Gertrude Currie of Glencoe, Ont., October 2.

WILLIAM FRANCIS DRYDEN, M.D., to Miss Edith E. Hall, both of Chicago, September 14.

JOHN WILLIAM BUSCH, M.D., to Miss Ottolie Woerthle, both of Philadelphia, October 2.

DAVID M. ANGUS, M.D., Spokane, Wash., to Miss Vesta Smith of Seattle, recently.

WILLIAM G. BEEK, M.D., to Miss Irene Wallace, both of Chicago, October 16.

FREDERICK C. HANMORE, M.D., to Miss Vera Cleary, both of Chicago, October 2.

Deaths

Jacob Baxter, M.D. Upper Canada Medical Board, 1853; New York University, New York City, 1854; Bellevue Hospital Medical College, 1866; of Cayuga, Ont.; registrar of deeds for the county of Haldimand for more than twenty years; a member of parliament from Haldimand County from 1867 to 1898 and speaker of the house from 1887 to 1891; surgeon and later surgeon-major of the Thirty-Seventh Battalion for several years; and retired with the rank of surgeon-lieutenant colonel in 1895; died at his home in Cayuga, July 23, from diabetes, aged 80.

Frank Judson Parker, M.D. Yale University, New Haven, 1898; of New York City; a member of the American Medical Association; assistant surgeon at the Manhattan Eye, Ear and Throat Hospital; ophthalmic surgeon of the Presbyterian Hospital; consulting ophthalmic surgeon to the Seton Hospital; the New York Orphanage Asylum and the Greenwich Hospital; attending physician to the Blind Babies' Home; died in the Presbyterian Hospital, New York City, October 2, aged 39.

Lewis Rufus Palmer, M.D. Hahnemann Medical College, Philadelphia, 1892; formerly president of the Maryland State Homeopathic Society; president of the Homeopathic Hospital of Maryland, Baltimore; professor of diseases of the heart and lungs in the Southern Homeopathic Medical College, Baltimore; and a practitioner of that city for nineteen years; died in the Hahnemann Hospital, Rochester, N. Y., October 2, aged 44, from hemorrhage following a gastric ulcer.

Joseph Hasbrouck, M.D. New York University, New York City, 1869; a member of the New York Academy of Pathological Science, and one of the best-known practitioners of Westchester County, N. Y.; a member of the Board of Health of Dobbs Ferry; died suddenly, October 2, from heart disease, while making a professional call in Uniontown, a suburb of Hastings, N. Y., aged 73.

William Gover Williams, M.D. George Washington University, Washington, D. C., 1860; died at his home in Conaways, Md., September 29, aged 75.

St. Mark Fortier, M.D. Tulane University, New Orleans, 1891; a member of the Southern Surgical and Gynecological Association; for thirteen years assistant house physician of Charity Hospital, New Orleans; at the time of his death in charge of the Louisiana Retreat; died at his home in New Orleans, September 29, from nephritis, aged 47.

Isaac Van Voorhis Wirebaugh, M.D. Western Reserve University, Cleveland, 1890; a member of the American Medical Association; for twenty years a practitioner of Prairie Depot, O.; who was operated on in a Toledo hospital, September 3, for tuberculosis of the intestines; died at his home, October 1, aged 49.

Adam J. Beall, M.D. University of Pennsylvania, Philadelphia, 1851; for thirty years a practitioner of Mansfield, La., but since 1887 a resident of San Marcos, Tex., and health officer of that city for several years; died at his home, September 20, from senile debility, aged 85.

William Chester Roy, M.D. College of Physicians and Surgeons, Chicago, 1883; New York University, New York City, 1884; a practitioner of Chicago until 1899, when he moved to Jacksonville, Fla.; died at the home of his mother in Jacksonville, September 30, aged 57.

Emile Andrew Crepin, M.D. Washington University, St. Louis, 1867; a member of the Medical Society of the State of California; for several years a practitioner of Glen Ellen; died at his home in Alhambra, near Los Angeles, September 22, aged 70.

C. R. Fisk, M.D. College of Physician and Surgeons, Keokuk, Ia., 1884; a practitioner of Keokuk until 1907, when he located at Drury's Bluff, Va.; died in a hospital in Richmond, Va., September 30, after an operation for intestinal obstruction, aged 60.

Ambrose Frederick Lepper, M.D. McGill University, Montreal, Quebec, 1911; of Saskatoon, Sask.; later assistant physician to the hospital at Bella Bella, Rivers Inlet, B. C.; died at Port Simpson B. C., August 1, from quinsy, aged 28.

William Thomas Thach, M.D. Philadelphia College of Medicine and Surgery, 185..; for twenty-five years a practitioner of Bellbuckle, Tenn.; died at the home of his son in Fordyce, Ark., June 28, from kidney disease, aged 79.

William E Fitzgibbons, M.D. University of Buffalo, N. Y., 1874; of Oglesby, Ill.; formerly of Wataga and for two years health officer of Peru; died in St. Mary's Hospital, La Salle, October 3, from heart disease, aged 63.

Edwin Franklin Evans, M.D. University of Missouri, Columbia, 1876; a practitioner of Youngstown, O., for twenty years; died in the Massillon State Hospital, October 1, from cerebral hemorrhage, aged 56.

Herbert Paris Sheldon, M.D. University of Buffalo, N. Y., 1879; a member of the Nebraska State Medical Association; died at his home in Scottsbluff, October 3, from bronchial pneumonia, aged 57.

Buna R. Moore, M.D. Medical College of Georgia, Augusta, 1899; a member of the American Medical Association; died at his home in Temple, Ga., September 23, from tuberculosis, aged 37.

George Sidney Farley, M.D. Philadelphia Medical College, 1850; of San Francisco; died at the home of his daughter in that city, August 9, from cerebral hemorrhage, aged 87.

Joseph S. Edmundson, M.D. University of Nashville, Tenn., 1872; died at his home in Brighton, near Birmingham, Ala., from disease of the kidney and heart, October 1, aged 62.

John T. Knowles, M.D. Memphis Hospital Medical College, 1909; a member of the Missouri State Medical Association; died at his home in Springfield, September 1, aged 33.

Allan Cameron, M.D. University of Glasgow, Scotland, 1853; a practitioner of Ontario since 1856; died at his home in Owen Sound, September 6, from senile debility, aged 83.

Ward S Hudson, M.D. Cleveland University of Medicine and Surgery, 1877; of Cleveland; died at the home of his sister in that city, September 30, aged 66.

Daniel R. Ambrose, M.D. New York University, New York City, 1868; of New York City; died in the Metropolitan Hospital, October 1, aged 77.

Clifton L. Donnell, M.D. Medical College of Ohio, Cincinnati, 1888; of Greensburg, Ind.; died in Cincinnati, August 19, from tuberculosis, aged 47.

John H. Reynolds, M.D. Eclectic Medical Institute, Cincinnati, 1876; died at his home in Lawrenceville, O., September 27, aged 65.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

SOME BRITISH ANALYSES

A Few International Frauds Are Exposed in England

The second volume of the book issued by the British Medical Association on "Secret Remedies" has recently appeared.[1] As might be expected, several of the nostrums that have been analyzed are international in their exploitation. Some are made in the United States while others originate in Great Britain. Some of these preparations have already been dealt with in THE JOURNAL; the following have not:

CADUM

Cadum is advertised extensively in the British Isles and less generally in the United States. It is sold as a remedy for "skin troubles" of all kinds. The claim is made that this preparation was "discovered" not by "mere chance or accident" but through "patient, painstaking investigations, extending over a long period, by an eminent chemist." The result of these "investigations" was the alleged discovery "that an extract from a particular part of a well-known tree possessed superior antiseptic and curative properties and exerted a powerful beneficial effect on the skin tissues." The implication is made that this "extract" is the essential ingredient of Cadum. The British chemists who analyzed this stuff reported that its formula was essentially as follows:

Zinc oxid	11.3 per cent.
Flowers of sulphur	8.0 per cent.
Boric acid	3.1 per cent.
Salicylic acid	0.8 per cent.
Oil of cade	7.0 per cent.
Hard paraffin	10.0 per cent.
Soft paraffin	60.0 per cent.

The chemists estimated that the cost of the ingredients in a 25-cent box was two-thirds of a cent. As might be expected all of the drugs found in Cadum have been used for years.

CARTER'S LITTLE LIVER PILLS

These tablets are sold under the claim that they "cure constipation, biliousness, sick headache and indigestion." A typical advertisement of this nostrum declares:

"Do not persecute your bowels. Cut out cathartics and purgatives. They are brutal—harsh—unnecessary."

The British chemists reported that chemical and microscopic examination of these pills indicated the presence of:

Podophyllin	Licorice root
Aloes	Wheat starch

When it is remembered that aloes is classed as a cathartic and podophyllin as a drastic purgative, the dishonesty of selling pills containing these two drugs under the implied claim that they contain neither cathartics nor purgatives is evident.

D. D. D.

This nostrum, which is advertised as a cure for eczema, is sold widely on both sides of the Atlantic. This does not mean, however, that it has the same composition in the United Kingdom that it has in the United States. The British law that requires "patent medicines" containing certain scheduled drugs to be labeled "Poison" does much to discourage the use of the more dangerous drugs as ingredients of "patent medicines." As sold in the United States, each ounce of D. D. D. contains, according to the label, as required by the Food and Drugs Act:

Chloral hydrate	7 gr.
Alcohol	38 per cent.

Chloral hydrate is one of the drugs in the British poison schedule. If this drug were a constituent of D. D. D. as sold in Great Britain, the nostrum would have to be labeled "Poison." But apparently chloral hydrate is omitted from the D. D. D. put up for British consumption. The chemists of the British Medical Association analyzed the preparation and assigned to it the following composition:

Salicylic acid	0.75
Carbolic acid	1.18
Oil of wintergreen	1.00
Glycerine	9.28
Alcohol	65.10
Water	22.69

This indicates that D. D. D. furnishes another example of how the poison label protects. It will be remembered that the vicious "baby killer," Winslow's Soothing Syrup no longer contains morphin when sold in Great Britain, the requirement of labeling it "Poison" having, presumably, greatly injured its sale in that country.

The D. D. D. that contains chloral hydrate naturally produces in some cases what physicians commonly call the "chloral rash." This physiologic effect is turned to account by the manufacturer as follows:

"Occasionally in bringing the disease to the surface, D. D. D. will spread the eruption temporarily over a much larger area. This is not a sign that the malady is growing more serious, but, on the contrary, it shows that the disease is being uprooted."

No matter how greatly the American and British preparations of D. D. D. vary in composition, the purchasers in both cases are told:

"D. D. D. is no ordinary 'patent medicine' but the prescription of a skin specialist, Dr. D. D. Dennis, who used the compound now known as D. D. D. successfully for years on all patients suffering from skin diseases."

In August, 1910, a man who had used forty-eight bottles of D. D. D. for eczema wrote to THE JOURNAL and complained that it had not relieved his eczema. He complained that he had lost fourteen pounds in weight, had become weak and emaciated and was "generally miserable." This example of the danger the public runs in using "patent medicines" containing such insidious poisons as chloral hydrate, emphasizes the need of a "poison label" requirement being added to the federal Food and Drugs Act.

CELMO

Celmo was sold for some time in Great Britain before it was exploited in this country. It is sold as a rheumatism cure and the purchaser is told that this method of treating rheumatism is something entirely new.

"Celmo is the latest and most successful method of treating rheumatism."

"Celmo is something entirely removed from all the ways hitherto tried."

"The new way—the right way to treat rheumatism . . . is to eliminate all the excess uric acid with Celmo."

Analyzed by the British chemists, this "wonderful new remedy" was reported to consist of:

Acetyl-salicylic acid	35.5 per cent.
Powdered charcoal, about	8.0 per cent.
Malt extract, dry	18.0 per cent.
Talc	14.5 per cent.
Other mineral constituents	2.8 per cent.
Water	12.3 per cent.
Alkaloid	0.5 per cent.
Extractive, about	8.0 per cent.
Oleo-resin of capsicum	Trace
Oil of juniper	Trace

According to this, Celmo tablets are essentially acetyl-salicylic acid (aspirin) tablets. The malt extract was evidently used to so "bind" the powders that they could be made into tablets. Talc is commonly added to tablets as a lubricant to prevent them sticking to the machine in which they are made. It is merely an example of a well-known, commonly-used drug put out under a fancy name, exploited by fraudulent claims and foisted on the public as something entirely new.

BROWN'S BRONCHIAL TROCHES

This preparation is sold by John I. Brown & Son, Boston, and is advertised largely both in the United States and Great Britain. It belongs to the "cough lozenge" type of nostrum and is harmful only in a negative way in that it may be used to allay symptoms of what may prove to be an incipient lung or throat trouble of a serious nature. The British chemists reported that examination of Brown's Bronchial Troches shows the presence of:

Powdered cubeb	Gum
Extract of licorice	Sugar

1. "More Secret Remedies," British Medical Association

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Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

AUTOVACCINES IN CANCER

To the Editor:—Having a case which I believe is sarcoma of the manubrium and apparently inoperable, I am very much interested in the article on page 962 of THE JOURNAL, Sept. 21, 1912, in regard to autovaccines in treatment of cancer. 1. Please tell me where I can get more information on this subject. 2. Has the treatment been used in this country yet, and if so, by whom?

E. CRAWFORD, M.D., Hudson, Colo.

ANSWER.—1. The article in THE JOURNAL is an abstract of a paper by Blumenthal, in the *Zeitschrift für Krebsforschung*, 1912, xi, 427. Blumenthal makes the autovaccine by cutting up with scissors a freshly excised scrap of the cancer and with mortar and pestle incorporating with it three or five times its bulk of water saturated with chloroform. The emulsion is poured into a glass jar and 10 drops of chloroform are added for each 100 c.c. of the emulsion. The jar, plugged with a glass stopper and well shaken, is kept at a constant temperature of 39 C. for three days; it should be shaken up well once or twice a day. According to Blumenthal, the autolysis going on in the emulsion during this period positively prevents any possibility of transmission. After the third day the autolysate is shaken up thoroughly again and the supernatant fluid is decanted and used for the subcutaneous injection. The fluid is turbid and flaky and Blumenthal always injects it on the side opposite the tumor. In his experimental work, Blumenthal obtained positive results in 80 per cent. and a definite cure in 35 per cent., when the emulsion was made from the individual's own cancer material. With tumor material from another individual, even of the same species, the figures were respectively 35 and 10 per cent. We have been able to find no other article describing the treatment by autolysates.

2. So far as we know, the treatment of cancer by an autolysate has not been used in this country. A somewhat similar method, however, in which there was no autodigestion, was described by A. F. Coca and P. K. Gilman in the *Philippine Journal of Science*, December, 1909; an abstract of this article appeared in THE JOURNAL, June 4, 1910, p. 1904. By this method the authors obtained somewhat favorable results. Considerable clinical work in this line, following the technic of Gilman and Coca, has been done recently by E. H. Risley, but the results are stated to have been decidedly negative. The vaccine emulsion even seemed to induce increased activity on the part of the cancer cells. Much work is going on in this line in this country and abroad, but the results have either proved disappointing or are not yet ripe for publication.

FLY DESTRUCTION AND PREVENTION

To the Editor:—In a small way we are doing our part toward the extermination of the common house-fly. It occurred to me that if one knew what became of the fly in the cold months, that would be the time to attack it. Will you kindly inform me on this point or direct me to some information? H. H. STEVENS, Yonkers, N. Y.

ANSWER.—We find no information that is very definite. One of the best publications on the house-fly is that of Dr. L. O. Howard, "The House-Fly: Disease-Carrier," F. A. Stokes Company, New York. According to Howard, the typhoid fly apparently disappears with the first sharp frost but may appear during warm days later. With a great reduction of temperature many larvæ are killed and eggs as well. Whether the pupæ in their tight puparia are destroyed by certain degrees of cold is not known. That adult flies linger in warm houses during the winter in sufficient numbers to perpetuate the species seems doubtful to Howard. They may remain dormant throughout the winter months in sheltered but cold situations. F. P. Jepson, of Cambridge University, believes that the species may be preserved in the winter and become a source of supply the following season. His researches showed that the flies may remain in an active condition the entire year and under favorable conditions may reproduce in the cold months almost as rapidly as in summer. He found that flies bred in winter might be kept alive for as long as eleven weeks. The generations of flies coming late in the fall seem to be more hardy and to live longer than those bred in summer, and Howard believes that flies of the season before, which propagate the new generations, are flies which have hibernated in the fall before laying their eggs. The killing of all flies in the fall would, of course, be an almost impossible proposition; but something could be done in the spring to trap and otherwise destroy the first generation of flies before they lay their eggs, which is about ten days after they first make their appearance. The best prospect of preventing flies is through the destruction of all breeding-places. Among interesting and valuable pamphlets on the subject of the house-fly may be mentioned the following:

House-Fly: United States Department of Agriculture, Bureau of Entomology, Circular 71.

The House-Fly at the Bar, etc.: Merchants' Association, New York, April, 1909.

The House-Fly: Publication 77, Florida State Board of Health.

House-Fly Number, *Bulletin Texas State Board of Health*, March, 1912.

THERAPEUTIC USE OF ALCOHOL

To the Editor:—Please give references to articles appearing in THE JOURNAL or other medical publications dealing with the legitimate or medicinal uses of malt or spirituous liquor.

W. S. RANKIN, Raleigh, N. C.

ANSWER.—The following books and articles which have appeared within the last few years will be found to discuss the use of alcohol in therapeutics from different points of view:

Billings, J. S.: Physiologic Aspects of the Liquor Problem, 2 vols., Houghton, Mifflin & Co., 1903.

Crosby, J. A.: Prescribing Alcohol, *Jour. Minnesota Med. Assn.*, 1907, xxvii, 163.

Hobhouse, E.: Alcohol on Its Medical Side, *Med. Mag.*, London, 1907, xvi, 190.

Hunt, Reid: Studies in Experimental Alcoholism, Bull. 33, Hygienic Laboratory, 1907, Washington, D. C.

Grimm, A. S.: Medical Profession Losing Faith in Alcohol, *West Virginia Med. Jour.*, September, 1908.

Kellogg, J. H.: Latest Verdict of Science on the Alcohol Question, *Lancet-Clinic*, Oct. 3, 1908.

McDonald, J.: Remedial Uses of Alcohol, *Brit. Med. Jour.*, Jan. 30, 1909.

Wiggs, L. B.: Some Pharmacologic Observations on the Action of Various Potent Remedies, I. Alcohol, *Old Dominion Jour. Med. and Surg.*, 1909, ix, 252.

Osborne, O. T.: Therapeutic Use of Alcohol, *Yale Med. Jour.*, 1909-10, xvi, 258.

Sajous, C. E. de M.: Alcohol in Therapeutics, *Jour. Inebr.*, 1910, xxxii, 149.

Starke, J.: Alcohol, the Sanction of Its Use, Scientifically Established and Popularly Expounded by a Physiologist, 1910, Putnam.

Sajous, C. E. de M.: Alcohol in Therapeutics, *Month. Cycl. and Med. Bull.*, July, 1910.

Bliem, M. J.: The Growing Disuse of Alcohol in Therapeutics, *Texas State Jour. Med.*, 1911-12, vii, 6.

The Metropolitan, a number devoted to the effects of alcohol, 1911, xxv, No. 11, The Metropolitan Life Insurance Company, New York.

Allen, Mrs. M. M.: The Medical Use of Alcoholic Liquors, Testimonies of Physicians, Marcellus, N. Y.

Also many other pamphlets published by the Women's Christian Temperance Union are to be obtained from Mrs. M. M. Allen, Marcellus, N. Y., superintendent medical temperance for the World's and National W. C. T. U.

FIRST USE OF THE THERMOMETER

To the Editor:—Please inform me when the clinical thermometer was first used and by whom, and also give any further data relating to its early use. W. C. H.

ANSWER.—Drebbel (1572 to 1634) is regarded as the inventor of the air-thermometer; Galileo (1574 to 1642) of the spirit-thermometer, and Roemer (1644 to 1710) of the mercurial thermometer. The first clinical use of the thermometer is attributed to Santoro, or Sanctorius, whose life was in the period from 1561 to 1635, and who for a while was professor at Padua. The latter describes his instruments in his "Commentaria in primam fen primi libris canonis Avicennae," published at Venice in 1646, now very rare. In the eighteenth century, Boerhaave, Haller and De Haen made a few temperature observations, but the subject did not receive any special attention until it was taken up by two Scotch physicians named George Martine and James Currie. The latter was the first (even before Brand of Stettin) to use cold bathing in typhoid fever ("Medical Reports," 1797) and he used the thermometer to keep "tab" on its effects. His work was soon forgotten and thermometry did not take its definite place in clinical medicine until Wunderlich published his classified work on the relations of bodily temperature in disease ("Das Verhalten der Eigenwärme in Krankheiten") in 1868. The reason of this was that until Lord Kelvin had established the "absolute scale of temperature" in 1849, there could be no accurate standardization of temperature observations. Sir Samuel Wilks, in his "Biographical Reminiscences" says that even at Guy's Hospital the thermometer was not in use before 1870, about the time of Wunderlich's book. A full account of the

early history of the subject is given in Dr. Weir Mitchell's "History of Instrumental Precision in Medicine" (Tr. Assn. Am. Phys., 1892) and in a capital little book by H. Carrington Bolton, entitled "Evolution of the Thermometer, 1592-1743" (Easton, Pa., 1900). Dr. Mitchell was the first to work up the history of the subject.

ARTICLES ON MUSIC AND ITS RELATION TO THERAPEUTICS

To the Editor:—I have been requested to address a music club and I would like to speak on "The Therapeutic Powers of Music." Please supply me with literature on the subject. P. K. R.

ANSWER.—The following may be referred to:

Wimmer, D. J.: The Influence of Music and Its Therapeutic Value, *New York Med. Jour.*, 1889, l, 258.
Harford, F. K.: Music and Illness, *Lancet*, London, 1891, ii, 43.
Oliver, P. V.: The Influence of Music in Hospitals, *Bull. Iowa Inst.*, Des Moines, 1900, ii, 70.
Merz, C. H.: Music in Medicine, *Lancet-Clinic*, 1892, xxix, 845.
Hermann, A. L.: Hygiene of Music, THE JOURNAL, Oct. 15, 1898, p. 939.
Davison, J. T. R.: Music in Medicine, *Lancet*, 1899, ii, 1159.
Boice-Hayes: Therapeutic Value of Music, *Homeop. Eye, Ear and Throat Jour.*, 1900, v, 290.
Shoemaker, J. V.: The Therapeutic Benefit of Music, *Med. Bull. Phila.*, 1901, xxiii, 290.
Brayton, A. W.: Music as a Therapeutic Agent, *New York Med. News*, Oct. 29, 1904.
Edwards, W. M.: Treatment of Diseases by Music, *Am. Med.*, 1905, v, 305.
Brayton, A. W.: Music and Poetry; Their Relation to the Medical Life, *Indianapolis Med. Jour.*, May, 1906.
Knott, J.: Music as a Therapeutic Agent, *New York Med. Jour.*, 1911, v, 678.
Corning, J. L.: Musical Memory and Its Derangements, *Med. Rec.*, New York, Jan. 13, 1912.

HORMONES OF THE BODY

To the Editor:—Kindly give in THE JOURNAL a short explanation of the hormones of the body, and greatly oblige several readers. A READER.

ANSWER.—The term "hormone" is derived from the Greek ὁρμάω, meaning to arouse or excite. A hormone is a substance produced by one organ and absorbed into the blood, which serves to arouse the action of another organ. The term was first used by Starling in connection with a substance produced by the intestinal mucous membrane, which, when injected into the blood, powerfully excited the secretion of the pancreas. This substance is known as pancreatic secretin. A similar hormone has been demonstrated in the mucous membrane of the pyloric end of the stomach and is known as gastric secretin. Theoretically it has been assumed that the influence exerted by various organs on others with which they have no nervous connection is due to hormones; thus it is believed that a hormone existing in the uterus or in the fetus arouses the function of the mammary gland during pregnancy. To a large extent the internal secretions of the ductless glands may be regarded as hormones.

GROWTH OF MOLDS IN DILUTE HYDROCHLORIC ACID SOLUTIONS

To the Editor:—In THE JOURNAL, Sept. 21, 1912, p. 960, under Queries and Minor Notes, you give directions regarding the preparation of an acid solution. Dilute solutions of hydrochloric acid of this strength do not keep without the addition of chloroform to prevent the growth of molds. A. DRYFOOS, M.D., New York City.

ANSWER.—The objection noted by our correspondent is worth remembering. The directions given in the answer were intended for preparation for immediate use in a given emergency, and did not aim at great accuracy or contemplate a solution to be kept any great length of time. While the solution is a quantitative one, it is used for a qualitative test, so that great accuracy in strength is not required. Hence the directions for preparation were given with a view to convenience.

GRADUATE WORK ABROAD

To the Editor:—Where can I obtain information relative to cost of course, entrance, requirements, etc., in diagnosis and surgery, in the clinics of Vienna? R. J. DREW, Kingston, Wis.

ANSWER.—This information was given in THE JOURNAL, April 8, 1911, where the whole subject of graduate study abroad is fully discussed and various articles of interest are cited. In a subsequent note, Oct. 5, 1912, p. 1310, other articles in current literature are quoted. The "Handbook to Medical Europe," a ready reference book to the universities, hospitals, clinics, laboratories and general medical work of the principal cities of Europe, by Dr. James Henry Honan, reviewed in THE JOURNAL, March 23, 1912, p. 886, may also be of interest. It is published by P. Blakiston's Son & Co., Philadelphia. The price is $1.50.

MEASUREMENTS OF A NORMAL CHILD

To the Editor:—I have been asked for information in regard to the measurements of a normal child, between 2 and 3 years of age—height, circumference of the head, neck, shoulders, body and hips. Please advise me where I can secure this information.

R. C. MCGANN, M.D., Mt. Sterling, Ill.

ANSWER.—The following figures referring to a child of 2 or 3 years of age are taken from Rotch's "Pediatrics":

		Cm.	Inches			Cm.	Inches
Head	2 years	48	19	Thorax	2 years	51	20⅛
	3 years	51	20⅛		3 years	55	21¾
						Kilos.	Lbs.
Height	2 years	84.55	33.82	Weight	2 years	13.80	30.36
	3 years	92.65	37.06		3 years	15.90	34.98
						Mm.	Inches
Length of spine	2 years					300-331	12-13
	3 years					341	13½

Measurements of various groups have given some variations.

COMPOSITION OF LIQUOR AMMONII ANISATUS

To the Editor:—Kindly inform me of the composition and method of preparation of the liquor ammonii anisatus of the German Pharmacopeia. F. E. WAY, M.D., Wahoo, Neb.

ANSWER.—The German Pharmacopeia, edition 5, directs that "liquor ammonii anisatus" be prepared by dissolving anise-oil, 1 part by weight, in alcohol, 24 parts by weight, and adding ammonia-water, 5 parts by weight. Anise-oil is the ethereal oil obtained by distillation from anise-seed.

PROBABLY A CASE OF HERNIA

To the Editor:—Please give the diagnosis and treatment in the following case: The patient, a child aged 1, of normal size and development, has apparently always been healthy. On crying or any straining effort there appears in the right inguinal region an enlargement about the size of a billiard ball, which is present during the greater part of the day but disappears at night. It apparently causes no pain but is slightly tender on pressure. H. T.

ANSWER.—If this is not a hernia, we are not able to suggest what it may be.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF POST-GRADUATE WORK, CONTRACT PRACTICE, LEGISLATION, MEDICAL DEFENSE, AND OTHER MEDICOLEGAL AND ECONOMIC QUESTIONS OF INTEREST TO PHYSICIANS

PROGRESS IN STERILIZATION LEGISLATION

Many inquiries have been received recently regarding the progress of state legislation on the sterilization of criminals. In order to collect all the data on this subject in a single article, it seems advisable to review the history of this movement. The first law on this subject was adopted by Indiana in 1907. This law is entitled "An Act to Prevent Procreation of Confirmed Criminals, Idiots, Imbeciles and Rapists," and provides that each public institution of the state entrusted with the care of such persons shall have on its staff, in addition to the regular institutional physician, two skilled surgeons of recognized ability, whose duty it shall be, in conjunction with the chief physician of the institution, to examine the mental and physical condition of such inmates as are recommended by the institutional physician and the board of managers. If, in the judgment of this committee, procreation is inadvisable, and there is no probability of improvement of the mental and physical condition of the inmate, the surgeons are authorized to perform "such operation for the prevention of procreation as shall be safest and most effective."

In 1909, Washington, California and Connecticut passed similar laws. The Connecticut law provides for a board consisting of two skilled surgeons and the physician in charge of the institution. If this board decides that procreation by any inmate reported to them by the warden or superintendent would produce children with an inherited tendency to crime, insanity, feeble-mindedness, idiocy or imbecility, and that

there is no probability that the condition of any such person so examined will improve to such an extent as to render procreation by any such person advisable, then the board shall appoint one of its members to perform the operation of vasectomy or oophorectomy on such person. It will be noted that the Connecticut law is more specific in that it specifies the conditions which would render procreation inadvisable, and also specifies the operation to be performed.

In 1911, New Jersey, Nevada and Iowa adopted similar laws. The New Jersey law is somewhat more detailed than those previously passed. It provides for a surgeon and a neurologist appointed for five years, who, in conjunction with the Commissioner of Charities and Correction, shall be known as the Board of Examiners of Feeble-Minded, Epileptics, Criminals and other Defectives. Those coming under the operations of the law are limited to persons convicted of the crime of rape or of such successions of offenses against the criminal law as in the opinion of the board shall be deemed sufficient evidence of confirmed criminal tendencies. The opinion of the board under the New Jersey law must be unanimous instead of merely a majority, and before performing the operation the board must apply to some judge of the Court of Common Pleas for an order authorizing the operation. The court is authorized to assign counsel to represent the individual under examination, and all such orders are subject to review by the Supreme Court. Surgeons performing the operation under the law are relieved from responsibility. A record is required of each examination, and a report from the superintendent is called for one year after each operation, showing the result of the operation and its effect on the individual.

In 1912 New York adopted a law providing for a board composed of one surgeon, one neurologist and one practitioner of medicine, each with at least ten years' experience, to be appointed by the governor for five years. The provisions regarding those coming under the operation of the law are similar to those in the New Jersey act. The board of examiners is required to apply to any judge of the Supreme Court (which, in New York, is the court of first and not of last resort), or to the county judge of the county in which the person is confined, asking for the appointment of counsel to represent the person to be examined. The same safeguards are provided as in the New Jersey law, as well as the same provisions regarding reports, etc. An additional clause is added, forbidding the performance of this operation on any person except as authorized by the act, or except as a medical necessity.

A comparison of the laws of Indiana, the first adopted, and New York, the last one, shows that the subject has been considerably amplified since its inception, additional safeguards having been thrown around it. While every possible precaution should be taken to avoid injustice to any individual, it seems doubtful whether the provision of the New Jersey law, permitting the appeal in each case to the highest court of the state, is advisable. The provision requiring an order of the court based on facts presented by the board in open court, in which the individual under consideration is given the right of appearance by counsel, would seem to afford ample safeguard against injustice. Unlimited right of appeal in each case to the highest court of the state hardly seems justifiable, as this provision could easily make it possible to block the operation of the law. The subject is still in a formative condition. Eight states have so far taken action. It is probable that a number of others will consider the subject seriously during the coming winter. The Supreme Court of Washington is the only court of last resort to pass on the question so far. On September 3, the court handed down a decision, sustaining the law and affirming its constitutionality. The court held that the operation was neither painful nor dangerous, and that punishment which included such an operation was not cruel or inhuman. As the principal provisions of the Washington law are found in all those enacted, it is probable that this decision will be accepted as establishing the right of the state to render procreation impossible as a punishment for certain crimes. The right of the state to impose such treatment on a defective ward of the state has not yet been reviewed by the courts.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Regular, Little Rock, November 12. Sec., Dr. F. T. Murphy, Brinkley; Homeopathic, Little Rock, November 12. Sec., Dr. P. C. Williams, Texarkana; Eclectic, Marion Hotel, Little Rock, November 12. Sec., Dr. C. E. Laws, Fort Smith.

CONNECTICUT: Regular, City Hall, New Haven, November 12. Sec., Dr. Charles A. Tuttle, 196 York Street; Homeopathic, Grace Hospital, New Haven, November 12. Sec., Dr. Edwin C. M. Hall, 82 Grand Avenue; Eclectic, New Haven, November 12. Sec., Dr. T. S. Hodge, 19 Main Street, Torrington.

FLORIDA: Regular, Jacksonville, November 11-12. Sec., Dr. J. D. Fernandez.

LOUISIANA: Regular, Tulane University, New Orleans, November 4-6. Sec., Dr. A. B. Brown, 108 Baronne Street; Homeopathic, New Orleans, November 4. Sec., Dr. Edward Harper, 702 Macheca Bldg.

MAINE: City Council Rooms, Portland, November 12-13. Sec., Dr. Frank W. Searle, 776 Congress Street.

MASSACHUSETTS: State House, Boston, November 12-14. Sec., Dr. Edwin B. Harvey, Room 159, State House.

MISSISSIPPI: Capitol, Jackson, October 22-23. Sec., Dr. W. W. Smithson.

NEBRASKA: State House, Lincoln, November 13-14. Sec., Dr. C. P. Fall, Beatrice.

NEVADA: Carson City, November 4. Sec., Dr. S. L. Lee.

TEXAS: Dallas, November 13-14. Sec., Dr. J. D. Mitchell, Wheat Bldg., Fort Worth.

WEST VIRGINIA: Wheeling, November 11-13. Sec., Dr. H. S. Barbee, Point Pleasant.

Preliminary Examiner Appointed in Maryland

Through an agreement among the medical colleges of Baltimore, a preliminary examiner acting under the control and direction of the Maryland Board of Medical Examiners has been appointed to examine entering medical students. Dr. Herbert Harlan, president of the board, writes that Mr. Isaac L. Otis has been selected for this place. Mr. Otis is engaged in teaching history at the Baltimore Polytechnic Institute and has at various times taught also Latin and English. He is said to be very much interested in the work and very careful in observing all details. Dr. Harlan believes that his appointment and the supervision of entrance requirements by the board form the greatest step forward that has been taken in Maryland for a long time. This concerted action on the part of the Baltimore schools and the Maryland Board of Medical Examiners is a positive step in the right direction, since in the past, as has often been stated, one of the weakest places in medical education in this country has been the disregard or feeble enforcement of rules governing preliminary qualifications.

Indiana July Report

Dr. W. T. Gott, secretary of the Indiana Board of Medical Registration and Examination, reports the written examination held at Indianapolis, July 9-11, 1912. The number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 79 of whom 77 passed, including 1 osteopath, and 2 failed. Sixteen candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Coll. of Phys. and Surgs., Chicago	(1911) 90.9; (1912)	83.3
Chicago Coll. of Med. and Surg.	(1911) 89.6; (1912) 81.2,	87.4
Rush Medical College	(1911)	87.9
Northwestern University Medical School	(1912) 87.2, 87.5,	92.9
Hahnemann Medical College and Hospital, Chicago	(1910) 80.7; (1912) 82.2, 88.6.	
Bennett Medical College, Chicago	(1912)	90.8
Indiana University	(1912) 79.6, 81.7, 85.3, 85.5, 85.9, 86.1, 86.3, 86.5, 87.2, 87.4, 87.5, 87.5, 87.8, 87.9, 87.9, 88, 88.3, 88.4, 88.5, 88.6, 89, 89, 89.1, 89.4, 89.4, 89.5, 89.6, 89.9, 90.3, 90.4, 90.4, 90.6, 90.6, 90.7, 90.7, 91.1, 91.1, 91.3, 91.4, 91.5, 91.8, 92.3, 92.4, 92.4, 92.7.	
University of Louisville	(1910) 84.5, 91.6; (1912) 81.6, 82.8, 83, 83.7, 83.8, 83.9, 86.6.	
Detroit College of Medicine	(1911)	83.9
University of Michigan, Dept. of Med. and Surg.	(1911)	87.3
St. Louis University	(1912)	90.2
Albany Medical College	(1911)	86.2
Jefferson Medical College	(1912)	88.6
Eclectic Medical College, Cincinnati	(1912) 87.3,	90.2
Woman's Medical College of Pennsylvania	(1894)	84.2
Meharry Medical College	(1912)	86.5
FAILED		
Louisville National Medical College	(1910)	65.6
University of Louisville	(1912)	73

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Howard University, Washington, D. C.	(1894)	Dist. Colum.
Northwestern University Medical School	(1910)	Illinois
Rush Medical College	(1904)	Illinois
College of Physicians and Surgeons, Chicago	(1902)	Illinois
University of Louisville	(1910)	Kentucky
Louisville Medical College	(1903)	Missouri
Baltimore Medical College	(1899)	W. Virginia
Johns Hopkins University	(1907)	Maryland
University of Maryland	(1909)	Maryland
St. Louis College of Physicians and Surgeons	(1908)	Kansas
Barnes Medical College	(1908)	Tennessee
Eclectic Medical Institute, Cincinnati	(1907)	Ohio
Starling Medical College, Columbus	(1906)	Tennessee
Jefferson Medical College	(1895)	N. Carolina
University of Nashville	(1909)	Illinois
Medical College of Virginia	(1895)	Virginia

Oklahoma July Report

Dr. John W. Duke, secretary of the Oklahoma State Board of Medical Examiners, reports the written examination held at Oklahoma City, July 9-11, 1912. The number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 70. The total number of candidates examined was 59, of whom 47 passed, including 1 osteopath, and 12 failed. Six candidates were licensed through reciprocity, and 7 were licensed under the exemption clause. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Arkansas	(1912)	73.4, 75.3
University of Colorado	(1912)	85.9
Howard University, Washington	(1891)	73
Chicago College of Medicine and Surgery	(1912)	83 87
College of Physicians and Surgeons, Chicago	(1912)	87.7
Atlanta College of Physicians and Surgeons	(1910)	90.4
Medical College of Indiana	(1902)	74.5
Northwestern University Medical School	(1912)	92.1
University of Louisville	(1912)	84.4, 86
Flint Medical College	(1907)	70
Tulane University of Louisiana	(1912)	80.5, 83.2
St. Louis University	(1911) 78.5;	(1912) 81.3, 86.1, 87
American Medical College	(1912)	84.4, 85.2
St. Louis College of Physicians and Surgeons	(1912)	79.7, 83.7
Missouri Medical College	(1878)	78.3
Univ. of Oklahoma	(1912)	78.9, 79.9, 81.3, 81.9, 83, 83.2, 86.2, 86.8
Jefferson Medical College	(1886)	72.9
Memphis Hospital Medical College	(1912)	83.4, 83.9, 88.3
University of Tennessee	(1912)	89.8
University of Nashville	(1911)	79.9, 89.8
Vanderbilt University	(1911) 85.4;	(1912) 82.3, 85.4
Fort Worth School of Medicine	(1912)	78.3
Southwestern University Medical College	(1912)	80.1
Milwaukee Medical College	(1912)	75.3
Wisconsin College of Physicians and Surgeons	(1912)	82.3

FAILED

College		
College of Physicians and Surgeons, Little Rock	(1911)	69.6
Howard University, Washington	(1904)	*74.6
Atlanta School of Medicine	(1913)	*75.5
Kansas City Hahnemann Medical College	(1910)	*70.7
St. Louis College of Physicians and Surgeons	(1912)	*70, *72.1
University of Oklahoma	(1912)	*75.6
University of West Tennessee	(1907)	67.8
Meharry Medical College	(1903) 69.6;	(1912) *77.6, *76.8, *78.2

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Mississippi Medical College	(1912)	Tennessee
Eclectic Medical Institute	(1891)	Texas
University of Tennessee	(1890) (1902) (1907)	Tennessee
Memphis Hospital Medical College	(1898)	Texas

LICENSED UNDER EXEMPTION CLAUSE

College	Year Grad.
College of Physicians and Surgeons, Keokuk	(1878)
University of Louisville	(1879) (1893)
Louisville Medical College	(1893)
Meharry Medical College	(1907)
University of Tennessee	(1880)
Baylor University, Dallas	(1901)

* Fell below 50 in one or more branches.

Wisconsin July Report

Dr. John M. Beffel, secretary of the Wisconsin State Board of Medical Examiners, reports the written examination held at Madison, July 9-11, 1912. The number of subjects examined in was 20; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 15, of whom 12 passed, including one osteopath, and 3 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Northwestern University Medical School	(1912)	75, 82, 83
Chicago College of Medicine and Surgery	(1910)	75
Bennett Medical College	(1912)	75, 77
Johns Hopkins University	(1912)	78
Milwaukee Medical College	(1912)	75, 75, 78
Wisconsin College of Physicians and Surgeons	(1912)	75

FAILED

College		
Indiana University	(1910)	58
Milwaukee Medical College	(1910) 61;	(1912) 56

Wisconsin September Reciprocity Report

Dr. John M. Beffel, secretary of the Wisconsin State Board of Medical Examiners, reports that at the meeting held at Milwaukee, Sept. 19, 1912, ten candidates were licensed through reciprocity, including one osteopath. The following colleges were represented:

College	Year Grad.	Reciprocity with
Rush Medical College	(1879) (1908)	Illinois
College of Phys. and Surg., Chicago	(1905) (1911)	Illinois
Hahnemann Med. College and Hospital, Chicago	(1901)	Illinois
Northwestern University Medical School	(1908)	Illinois
Johns Hopkins University Medical School	(1911)	Maryland
St. Louis University	(1911)	Illinois
University of Nashville	(1911)	Tennessee

North Dakota July Report

Dr. G. M. Williamson, secretary of the North Dakota State Board of Medical Examiners, reports the written and oral examination held at Grand Forks, July 2-6, 1912. The number of subjects examined in was 13; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 10, of whom 6 passed and 4 failed. Two candidates were licensed through reciprocity. Eight other candidates applied for licenses through reciprocity but were required to take supplementary examinations in a few subjects, 6 of whom passed and 2 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Northwestern University Medical School	(1912)	91.2
Grand Rapids Medical College	(1907)	77
Univ. of Minn., Coll. of Med. and Surg.	(1912)	83.9, 84.8
Hamline University	(1896)	78.2
University of Manitoba	(1912)*	

FAILED

College		
Chicago College of Medicine and Surgery	(1910)	70.7
Keokuk Med. Coll., College of Phys. and Surg.	(1903)	67.4
Barnes Medical College, St. Louis	(1905)	67
University of Toronto, Ontario	(1910)	72.4

RECIPROCITY WITHOUT EXAMINATION

College	Year Grad.	Reciprocity with
Univ. of Minn., Coll. of Med. and Surg.	(1909)	Minnesota
Hamline University	(1911)	Minnesota

RECIPROCITY WITH SUPPLEMENTARY EXAMINATION

College		
Northwestern University Medical School	(1910)	Illinois
Chicago College of Medicine and Surgery	(1910)	Illinois
University of Minnesota, College of Med. and Surgery, (1903) (1905)	(1902)	Minnesota
Milwaukee Medical College	(1910)	Wisconsin

FAILED TO PASS SUPPLEMENTARY EXAMINATION

College	Year of Graduation
Rush Medical College	(1906)
University of Minn., Coll. of Med. and Surg.	(1904)

* No grade given.

The following questions were asked:

ANATOMY

Answer eight questions; include 3 and 6. 1. Describe the superior mediastinum, naming its contents. 2. Describe the course and distribution of the external popliteal nerve. 3. Describe the fissure of Rolando. Name the convolutions by which it is bounded. By what lines on the exterior of the skull would the position of the fissure be indicated? 4. Name the coverings of the testicle and of an oblique inguinal hernia. 5. Name the structures severed in an amputation through the elbow-joint. 6. Describe the operation of ligature of the left common carotid artery at the "seat of election," naming the structures seen and divided. 7. Describe the thoracic duct. 8. Describe the articular surfaces of the lower ends of the radius and ulna. With what do the various surfaces articulate? 9. Give the course and relations of the esophagus in the thorax. 10. Describe the antrum of Highmore.

HISTOLOGY

1. Give the histology of blood. 2. Describe the kidney. 3. Give the histology of the stomach. 4. Describe the different kinds of muscle found in the body. 5. Give the histology of bone.

PHYSIOLOGY

1. Describe the functions of the spinal nerves. 2. What are the principal functions of the posterior, lateral and anterior columns of the spinal cord? 3. Describe the process of digestion. 4. Describe (a) chyme, (b) chyle. 5. Give the varied functions of the sympathetic nerves. 6. State the approximate time of eruption of the temporary teeth. 7. Name two circumstances influencing secre-

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tion. 8. Give the reactions of the following fluids and state the cause of reaction in each case: blood, gastric juice and pancreatic juice. 9. How is bone nourished? 10. Name the excretory glands of the body and the functions of each.

PATHOLOGY

1. Describe the characters, naked eye and microscopic, of the blood in myelogenous leukemia and in pernicious anemia. 2. Describe the appearance of the heart in an advanced case of mitral stenosis. What are the results of mitral stenosis on other organs, and explain how these results are brought about. 3. Describe the microscopic appearance of (a) a myoma, (b) a fibroma, (c) a papilloma, (d) a scirrhus cancer. 4. Discuss the causation and pathology of acute lobar pneumonia and give an account of its various stages. 5. What are the varieties of cerebrospinal meningitis? Give an account of the organism which causes the epidemic form.

BACTERIOLOGY

1. Describe the typhoid bacillus. State also where it is found and its behavior in culture mediums. 2. Give the different steps in making Widal's test. 3. Describe the process of preparing blood-serum to be used as a culture medium. 4. How would you diagnose a suspected case of diphtheria? Describe in detail. 5. What is diphtheria antitoxin? How is it obtained?

CHEMISTRY

1. What treatment is indicated in a case of poisoning by mercuric chlorid? 2. How would you determine, chemically, whether a urinary deposit were composed of urates or phosphates? 3. What is the difference between atomic weight and specific gravity? 4. Give in detail a test for albumin in the urine. 5. Give in detail a test for sugar in the urine. 6. Differentiate hydracid and oxacid. 7. Give the chemical composition of (a) Glauber's salt, (b) Epsom salt. 8. What are (a) albuminoids, (b) proteids? Give example of each. 9. Give two tests for morphin. 10. Define allotropism.

OBSTETRICS AND DISEASES OF CHILDREN

1. What changes take place in the uterus during pregnancy and during involution? 2. How would you diagnose a breech presentation? 3. Conduct a labor with a breech presentation. 4. Give etiology and treatment of puerperal infection. 5. What are the causes of sudden death of the mother following labor? 6. Placenta prævia: causes, symptoms and treatment. 7. How would you treat asphyxia in the new-born? 8. Give the causes and treatment of seborrhea capitis in infants. 9. Give causes, prophylaxis and treatment of ophthalmia neonatorum. 10. Give etiology, diagnosis and treatment of scarlet fever.

GYNECOLOGY. DISEASES OF EYE AND EAR AND NERVOUS SYSTEM

1. What procedure do you follow and what special precautions do you take in making pelvic examinations of vaginas? 2. Give two common causes in dysmenorrhea and treatment. 3. Pruritus vulvæ, causes and treatment. 4. Leukorrhea, causes and treatment. 5. Symptoms and diagnosis in ruptured ectopic pregnancy. 6. Enumerate retrodeviations of acute affections of the nasal passages and how to guard against their occurrence. 7. What symptoms are produced by adenoids? 8. Give general outline of treatment of "foreign bodies" in cornea and conjunctiva. 9. Enumerate three forms of insanity with differential diagnosis of each. 10. Give definition, etiology, treatment and prognosis of locomotor ataxia.

PREVENTIVE MEDICINE

1. What is a germicide? Name four of the most important and how used. 2. Define actinomycosis. How is it contracted and what preventive measures should be taken? 3. Name all the causes you know for the summer diarrhea of infants; also the most important factor in prophylaxis. 4. Describe your method for the disinfection of typhoid excreta. In the use of bichlorid of mercury for this purpose, what precautions should be taken and why? 5. What is intestinal or auto-intoxication? What causes it and how would you prevent it? 6. Outline your method of general prophylaxis for diseases of the respiratory apparatus. 7. What are the conditions which render water unfit for drinking purposes? Name the different methods for purification of the same. 8. Give your method for the disposal of garbage and sewage in a small country town. 9. How is malarial fever contracted? What means would you employ to prevent its spread? 10. How long would you quarantine for diphtheria? What method would you use to determine the time?

SURGERY

1. Describe in detail your treatment of a simple fracture of the femur. 2. Give symptoms and treatment of tuberculous disease of hip-joint. 3. Name the principal causes and describe the general symptoms of ileus. 4. Give differential diagnosis of renal calculi, gall-stones and acute appendicitis. 5. Give in their order the seven forms of perforation of bowel occurring in typhoid fever. 6. Define: Charcot's joint, Volkmann's contracture, Pott's fracture, spina bifida, cystocele, talipes equinovarus.

PHYSICAL DIAGNOSIS

1. Describe briefly the following diagnostic signs or tests and name opposite each the disease or diseases in which they may be found: (a) Koplik's spots; (b) Romberg's symptoms; (c) Argyll Robertson pupil; (d) Babinski's reflex; (e) Kernig's sign; (f) caput medusæ; (g) Heberden's nodes. 2. (a) Show, by diagram and brief description, the percussion boundaries of the adult heart; (b) name the viscera contained in the left hypochondriac region. 3. Describe briefly the different types of chests and their significance. 4. Give the etiology, the symptoms and the complications of typhoid fever. 5. The differential diagnosis of variola vera, scarlatina and morbilli. Include the probable complications. 6. Give the etiology, the different types, the characteristic symptoms and the prognosis of rheumatoid arthritis. 7. Differentiate between chronic appendicitis and nephrolithiasis. 8. Definition, etiology, symptoms and prognosis of (a) herpes zoster and (b) erysipelas. 9. Definition, etiology, symptoms and prognosis of myxedema. 10. Differential diagnosis between phlegmonous tonsillitis and diphtheria.

TOXICOLOGY

Answer five questions only. 1. What is the smallest lethal dose of atropin? 2. What do you know of opium as a poison? 3. Give the symptoms of poisoning by phenol (carbolic acid). 4. Can mercuric chlorid act as a poison if used in solution externally? 5. Symptoms of poisoning by lead. 6. Post-mortem appearances after arsenic poisoning. 7. Has the hypodermic use of apomorphin been attended with fatal results? If so, in what amount? 8. What is meant by ptomain poisoning? 9. Give test for arsenic. 10. Is there danger of toxic effect in using bismuth paste in suppurating sinuses?

MEDICAL JURISPRUDENCE

Answer five questions only, including No. 5. 1. Called to view the body of a person found dead, how would you determine the time of death? 2. Define "insane delusion." 3. Can a physician take or call a stranger, not a physician or nurse, into a room where he is treating a patient, without the patient's consent? 4. What is necessary to establish a legal defense of insanity in a criminal case? 5. The dead body of a man, with a fractured skull, was found at the foot of a stair. His cap was found in a hall leading to the top of the stair. On the cap was a dark stain. People in the house said that the deceased met his death by accidentally falling from the top of the stair. If it could be shown that the stain on the cap was a blood-stain and that the blood was that of the deceased it would prove that the deceased was assaulted and killed inside the house and the body thrown out to make it appear an accident. Can this be done? If so, describe the process. 6. What is "criminal abortion"? 7. Give the signs of death. 8. Can an unregistered physician legally practice medicine in this state, as the hired assistant of a qualified and registered practitioner? 9. A suit was brought against a physician for malpractice. Defendant (the physician) claimed that the alleged disability was due to the results of a specific contagious disease, for which he had treated the plaintiff, and not to any neglect or improper treatment on defendant's part. Plaintiff's attorney objected to the defendant testifying as to the nature of the specific disease, on the ground that it would be a violation of professional privilege. What is your opinion of that point? 10. A physician in good faith stated that a patient, an unmarried woman of good reputation, was pregnant. This statement was made to the patient, who had consulted the physician, and in the presence of her mother, who had accompanied her. The physician was sued for slander although it was admitted that the statement, which proved to be incorrect, was made without malice. Was the physician legally guilty of slander?

Book Notices

DISEASES OF THE NOSE AND THROAT. Comprising Affections of the Trachea and Esophagus. A Text-Book for Students and Practitioners. By St. Clair Thomson, M.D., F.R.C.P. (Lond.), F.R.C.S. (Eng.), Professor of Diseases of the Throat and Professor of Laryngology in King's College Hospital. Cloth. Price, $7.50. Pp. 791, with 294 Illustrations. New York: D. Appleton and Company, 1912.

The opening chapters on examination are practical and concise, and the technic described coincides with the routine usually taught and practiced in this country. The importance of proper technic is made clear by illustrations and explanatory notes. In direct laryngoscopy and esophagoscopy Thompson advocates Killian's method under local anesthesia in adults, and complete general anesthesia for children, which has been the common method. We find, however, that children can usually be operated on by Killian's method to better advantage without general or complete anesthesia, and often without any anesthetic.

The chapters on treatment are prolific with good hints which quite agree with accepted experience. The paragraph on galvanocautery is valuable especially in advising antiseptic precautions. The use of heat or cold and rest as therapeutic measures and some timely words on cocain, its action, management of anesthesia and toxic effect, can be read with gain by all students. A practical outline of symptoms of nasal disease along with one giving effects and symptoms of nasal obstruction is followed by some good discussion of the pharynx and tonsils with their affections, by illustrations of various operative procedures, and by some valuable reproductions of *x*-ray pictures on sinus diagnosis and operations. The various methods are impartially elaborated for the reader to take his choice. The chapter on adenoids is quite a book in itself and can be understood even by the tyro. Hemorrhage from the nose and throat is concisely considered and the methods of treatment and prevention clearly demonstrated. Diseases and deformities of the septum receive adequate attention and most of the operations for treatment and correction of the various conditions are fully described.

The neuroses and the different forms of paralyses of the larynx are ably discussed and illustrated. The trachea and esophagus with their diseases occupy a generous space. Intubation, tracheotomy and laryngectomy are well pictured. Tuberculosis and syphilis of the upper air-passages are deservedly given many pages in which one finds much useful information. The different infectious diseases as related to the upper air-passages are exhaustively presented. Foreign bodies in air-passages and food-passages with operations for their removal are freely illustrated. Altogether this is an excellent work;

but we regret that the illustrations, though answering the purpose, are not artistically executed; they do not do justice to the times and the text. Although the work is comprehensive several important subjects have been omitted and the author appears to be unfamiliar with a number of the recent developments in rhinology and laryngology in this country.

DUSTY AIR AND ILL HEALTH. A Study of Prevalent Ill Health and Causes. By Robert Hessler, A.M., M.D. Cloth. Price, $1.65. Pp. 352. For sale by the author. Logansport, Ind., 1912.

We have before us a work *sui generis*; it is not addressed to physicians, but maintains toward its readers an attitude in which it is almost assumed that the hearer is in a position to give a critical judgment of the matters under discussion. The style is not dogmatic nor is the arrangement systematic. The author passes gracefully from the relation of the symptoms in a case to a speculation as to what sort of physician the patient's son, who has previously treated him, may be. The author makes a distinction between disease and ill health which may not stand a critical examination, but which serves to emphasize a matter worthy of careful consideration, namely, that the physician of the present day by his precision in diagnosis is trained to neglect the minor ills of his clientele which do not fit into his scheme of classification and are therefore not worth his attention. These indefinite affections have impressed Dr. Hessler as arising from very common sources, many being caused by dusty air. He has collected a considerable amount of evidence in favor of his view.

Since the work does not pretend to be a scientific contribution to the literature of dust disorders or coniosis, it is difficult to give advice as to its value to the physician. He can find some valuable hints in it, although the preface states that it is not written for the practitioner of medicine. Whether he will find it desirable to recommend it to his patients is a question for some deliberation. To a certain class of patients who can be trusted to make the kind of observations which the author expects his patients to make, it might be suggestive and useful. For the ordinary chronic patient it would probably foster untenable theories and by its numerous reflections on the ability of physicians lessen the confidence of the patient in his physician. At any rate, we believe that before recommending this work to patients the needs of the individual patient should be taken into consideration.

PHYSIOLOGISCHES PRAKTIKUM. Chemische und Physikalische Methoden. Von Prof. Dr. Emil Abderhalden, Direktor des Physiologischen Institutes der Universität zu Halle a. S. Paper. Price, 10 marks. Pp. 283, with 271 illustrations. Berlin: Julius Springer, 1912.

This work is devoted to the descriptions of tests and methods to be pursued in the analysis of the different secretions of the body, accompanied by many illustrations of the apparatus to be used in the carrying out of these methods. The author goes into the analysis of the blood and the taking of the blood-pressure. He also includes in this work the practical methods in making a general physical examination of the different organs of the body. As a handy book of reference to be used in the laboratory this work can be recommended.

NERVOUS AND MENTAL DISEASES. By Archibald Church, M.D., Professor of Nervous and Mental Diseases and Medical Jurisprudence in the Northwestern University Medical School, Chicago, and Frederick Peterson, M.D., Professor of Psychiatry, Columbia University. Seventh Edition. Cloth. Price, $6.50. Pp. 932, with 343 illustrations. Philadelphia and London: W. B. Saunders Company, 1911.

This edition is in some respects a new work. The section on nervous diseases has been revised and new chapters added. The articles on poliomyelitis and pellagra are rewritten so as to embody recent researches. The author gives a good review of the theories of hysteria. While describing the views of Freud, he follows in general the outline presented by Charcot and his school. On the other hand, in the section on insanity Peterson describes in some detail the method of psychanalysis as used by Freud. The section on insanity has been rearranged and rewritten to correspond to the more modern method of classification. The work has become a standard text-book on the subject of which it treats, and the revision bids fair to enable it to maintain the high position that it has attained.

Medicolegal

Refusal to Marry a Woman Who Has Become an Invalid

(Travis vs. Schnebly (Wash.), 122 Pac. R. 316)

The Supreme Court of Washington reverses a judgment rendered in favor of the plaintiff for damages for breach of promise where a defense was that subsequently to the time the engagement was made to marry the plaintiff became afflicted, or was discovered to be afflicted, with what is commonly known as "floating kidney," the tendency of which is to render a woman so afflicted therewith nervous, irritable, and weak, and to greatly increase the danger above the danger ordinarily incurred by entering into the marriage relation and becoming a mother, etc. The court holds that it was reversible error to refuse to instruct the jury that if, after the plaintiff and the defendant became engaged the plaintiff became too ill to enter into the marriage relation, the defendant would not be required to wait an unreasonable length of time for her to recover, and if the jury found from the evidence that she was thus ill, and that the defendant waited as long as was reasonable under all the circumstances for her to recover, and she had not recovered, then he had a perfect right to withdraw from the engagement, and the verdict should be for him.

When the parties first entered into their mutual agreement to marry, the plaintiff, as far as known, was a strong and healthy woman free from any physical ailments or diseases. Shortly thereafter, without fault of either of the parties, she became ill, and was compelled to submit to a surgical operation, and for a long period of time continue under medical treatment. The defendant contracted to marry a healthy woman, and not an invalid. When it became manifest that by reason of poor health she could not marry, postponements were made awaiting her recovery. This constituted a modification of the original contract, and imposed on the defendant the duty to wait a reasonable time for her recovery. The agreement still contemplated that the defendant was to marry a healthy woman. He at no time agreed to marry an invalid, although he did agree to wait a reasonable time. Ill health of one party, contracted without his or her fault, after the original promise to marry, is a defense available to the other party in an action for breach of promise. A man who has only agreed to marry a healthy woman should not be compelled to accept her as his wife should she become an invalid before marriage.

This court has made an exhaustive examination of the authorities, but finds no similar case. Here was a plaintiff who, according to the defendant's contention, was well and hearty when he agreed to marry her, but who had the misfortune to incur a serious and perhaps permanent illness which impaired her physical vigor and unfitted her for becoming a helpmeet to her husband. Yet she insisted that he should either marry her or respond in damages. No court should impose any such obligation on him. The plaintiff had been unfortunate, but that was not the defendant's fault. It must be presumed that he would not have entered into the agreement could he have foreseen the unfortunate condition into which she had fallen relative to health. To award damages for his refusal thereafter to marry her would be to make for him a contract which he himself neither made nor intended to make.

Contracts of the Insane—Waiver of Privilege

(San Francisco Credit Clearing House vs. MacDonald (Cal.), 122 Pac. R. 964)

The Court of Appeal of the First District of California says that a person of unsound mind whose incapacity has been judicially determined cannot make a contract nor delegate any power until his restoration to capacity. But the contract of a person of unsound mind, although not entirely deprived of understanding nor judicially determined to be insane, is not void, but merely voidable. Consequently it would seem that a person may be insane in the general acceptation of the term and yet his insanity may be of such a character as not to deprive him entirely of the power of knowing and understanding the nature of ordinary business transactions,

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and that such form of insanity, or rather unsoundness of mind, will not render a person legally incapable of entering into a valid contract. In this case a claim of one Gage against the defendant was compromised for $4,000, for which the defendant gave Gage his note, which was assigned to the plaintiff for the purpose of collection. If Gage was not so far insane at the time of the compromise as to be considered without understanding, he in person would have been legally capable of conducting and completing negotiations for the settlement of his claim against the defendant, and as a matter of course that which Gage could do in person might also be done by his agent and attorney in fact. Moreover, if Gage in person had sued on the note, he would undoubtedly have waived the privilege which the law gave him, of sealing the mouth of his physician, by calling the latter to testify to his mental condition, and the assignment of the note to the plaintiff for the purpose of collection made the plaintiff his agent and carried with it the implied consent to use such means and introduce such evidence on the trial of the case as might be necessary to a recovery on the note. Therefore the act of the plaintiff in calling and examining as a witness a physician who had attended Gage as a patient must be held to be Gage's act and Gage's waiver of the confidence reposed by him in his physician. The general rule of law found in subdivision 4 of section 1881 of the California Code of Civil Procedure which, in effect, declares that a physician may not give in evidence any information concerning the ailment of his patient which was acquired during his employment and necessary to the performance of his professional duties was created for the protection of the patient and confers a personal privilege on him which may be expressly or impliedly waived by him in person or by an attorney or agent.

Relative Weight of Testimony of Alienists

(In re Ward (U. S.), 194 Fed. R. 89)

The United States Circuit Court of Appeals, Third Circuit, says that whatever may be the rival contention of alienists, the lay mind is very apt to rely on the testimony of witnesses who prove the conduct, actions and speech of a man, and where of certain alienists called as witnesses two of them had under treatment the man whose sanity was in question their testimony had correspondingly greater weight than that of hypothetical testimony.

Society Proceedings

COMING MEETINGS

Clinical Cong. of Surgeons of North America, New York, Nov. 11-16.
Kentucky State Medical Association, Louisville, Oct. 29-31.
Mississippi Valley Medical Association, Chicago, Oct. 22-24.
Southern Medical Association, Jacksonville, Fla., Nov. 12-14.
Virginia Medical Society, Norfolk, Oct. 22-25.

PENNSYLVANIA STATE MEDICAL SOCIETY

Sixty-Second Annual Meeting, held in Scranton, Sept. 23-26, 1912

The President, DR. JAMES TYSON, Philadelphia, in the Chair

A list of the newly elected officers appeared in THE JOURNAL, October 12, p. 1386.

The Treatment of Epilepsy with Crotalin

DR. RALPH H. SPANGLER, Philadelphia: I have studied eighteen cases of epilepsy during a period of six months in each case. I was able to determine (1) that the symptoms of epilepsy are closely related to certain changes in the composition of the blood; (2) that it is possible to influence the composition of the blood through the hypodermic administration of crotalin solution; (3) that we possess in crotalin a therapeutic means that can influence advantageously the altered condition in the blood of epileptics.

DISCUSSION

DR. MYER SOLIS-COHEN, Philadelphia: I wish to suggest that epilepsy may be due to disease in the hypophysis, and that the different clotting-times of the blood may vary according to whether the anterior or the posterior lobe is affected. All cases ought to be examined for the clotting-time, and the treatment should be determined by whether the clotting-time is lengthened or shortened. In cases of shortened clotting-time, extract of the anterior lobe of the pituitary body should be given, as well as crotalin.

DR. L. NAPOLEON BOSTON, Philadelphia: We should try to find out what other elements in the blood are affected by the venom. The coagulation-time is but one symptom, as it were, in the cases that give us this knowledge. There are methods, although not very satisfactory ones, by which we can estimate these various factors. It is impossible to obtain every reading the same with regard to viscosity, coagulability or tension, because of the difficulty in conveying the blood from the patient. I have treated eleven cases of epilepsy with rattlesnake venom; nine patients have shown relief. In girls at about the age of puberty, it seems to have a decided effect, not only on the epileptic seizures, but on the general temperament and development.

DR. HARRY LOWENBURG, Philadelphia: The use of crotalin is not without danger. I had several abscesses occur. A week or so after the injection a hard node would appear, which would be followed by softening; incision would reveal a subcutaneous slough. In one case I feel sure that the patient died as the result of the use of crotalin.

DR. R. H. SPANGLER, Philadelphia: I have under observation a girl who has had no treatment for over a year, and has had no attacks for twenty months. I tested the clotting-time in June, and found it to be six minutes and a quarter. Therefore, it looks as if there were some lasting effect from the injections. The personal equation is largely eliminated by taking the average clotting-time in the case for a month. The only observation that I have made is on the effect on the clotting-time, but I hope to take up the matter of viscosity. Cases of epilepsy developing at the menopause have done remarkably well under the crotalin treatment. I have had but one abscess in some thousands of injections.

Medical Inspection of Schools in the Fourth-Class Districts in Pennsylvania

DR. SAMUEL G. DIXON, Harrisburg: It was not until 1911 that the state passed a law to promote the medical examination of school children. In this law, which is in the main good, there are two provisions that seriously cripple its action in districts comprising nearly three-quarters of the whole number of children. These are that in districts of the third class it is at the option of the directors whether in any particular year they shall have medical inspection or not; and that in districts of the fourth class, they may dispense with inspection entirely by vote. Through this defect in the law, over 6,000 children were left to go without the medical care given in other counties, although about the same number did reap the benefit of medical examination. One or more defects were found in 105,000, and the returns of the teachers indicate that thousands of children were distinctly benefited by the inspection made last year.

DISCUSSION

DR. WALTER S. CORNELL, Philadelphia: Pennsylvania is away ahead of any other state in the Union at the present time in regard to medical inspection, in spite of the defects in the law. The difficulties that have arisen around medical inspection are due to the system of medical practice under which we live. Medical men have been trained to a profession rather than to a business. In professional work, the physician takes a fee and performs occasional services; but when he draws a salary he must attend to his duties regularly. Another point is that the medical schools have not trained men in the study of the specialties in relation to internal medicine; so that, in order to get the facts needed in such work as medical inspection of schools, they have to buy large books on the different specialties.

The Bacteriology of Catarrh and Common Colds

DR. A. PARKER HITCHENS, Glenolden: Acute catarrh of the mucous membranes of the upper respiratory passages is among

the most common of diseases. Little attention is paid to severe forms of this condition, and practically none to milder cases. The economic loss from catarrhal conditions is enormous. This loss results from direct disability, and indirectly from a great variety of other affections dependent on diminished local resistance. Many theories have been advanced to account for the etiology of acute catarrh. The determining cause is undoubtedly an infection. A number of bacteria classed as catarrhal organisms may be separately or conjointly responsible. A knowledge of the pathology of the disease and its etiology should suggest more efficient means for prevention, cure and control of sequelæ.

DISCUSSION

DR. WALTER WEBB, Swarthmore: During the past winter and early spring months, I have treated all cases of catarrhal conditions of the upper respiratory passages with pulmonary mixed bacterins exclusively, without a single failure. Many patients were relieved entirely within one week, only a few requiring more than two or three injections. As these rendered them practically immune for a long period, I would strongly urge the use of this remedy. I have used the serum in five children under 10 years, employing a smaller quantity and lengthening the interval. I have had no reaction, except an inflamed condition of the area of injection. In most cases the children came through normally and were not inconvenienced.

Hemiplegia with Gradual Onset, Due to a Cerebral Neoplasm

DR. M. HOWARD FUSSELL, Philadelphia: Mrs. C., aged 44 years, underwent a hysterectomy in 1910. In July, 1911, she was seized with a sudden clonic spasm of the left arm, with no loss of power. This was followed by loss of power in the right and left middle fingers, numbness, and gradual loss of power in the hand, arm and shoulder. Four weeks later there was loss of power in the left leg, with vertigo and headache. The eye-grounds were normal. Then there was loss of power in the left face. An operation was performed, but the patient died. Autopsy showed no gross changes. On the surface of the horizontal section there was seen softening of the right occipital lobe, and microscopically there could be distinguished tumor structure. The right occipital, parietal and temporal lobes and the ependyma were involved.

(To be continued)

INTERNATIONAL CONGRESS ON HYGIENE AND DEMOGRAPHY

Fifteenth Meeting, held at Washington, D. C., Sept. 23-28, 1912

(Concluded from page 1396)

Vaccination in Siam

DR. PAUL G. WOOLLEY, Cincinnati: Vaccination was first introduced into Siam in 1840 by American missionaries, and up to 1906, when I was engaged by the Siamese government to equip and direct the work of its serum laboratory, the bulk of the work and the expense of vaccination had been undertaken by the American missionaries. Since 1906, vaccine has been made by modern methods, and no pains have been spared to produce a clean, active virus. But in spite of the character of the vaccine and the possibilities of making very large quantities, only comparatively small amounts have been used, with the result that, in 1908, a severe epidemic of smallpox occurred. This happened, and will happen again, because vaccination is not compulsory in Siam, and because revaccinations are very infrequent.

Etiology of Trachoma

DR. ANNA W. WILLIAMS, New York City: Hemoglobinophilic bacilli are found in cases of trachoma coincidently with Prowazek's (trachoma) inclusions. These bacilli have the same cycle of development as that of the "Prowazek inclusions." They cannot be differentiated from the Koch-Weeks bacillus or *B. influenzæ*. Cases beginning as acute contagious conjunctivitis may pass into the condition known as trachoma. These facts lead to the hypothesis that "trachoma" is caused by infection with one or more of the group of hemoglobinophilic bacilli, producing primarily an acute inflammation, and, secondarily, in susceptible cases, a subacute and chronic productive inflammation. Acting on this hypothesis for the past year and a half the acute contagious conjunctivitis cases as well as those of "trachoma and allies" have been closely followed and treated in the New York schools and homes. Now, there are practically no cases of "typical trachoma."

Bacteriologic Examination of Market Milks

DR. P. G. HEINEMANN, University of Chicago: Examination of 215 samples of milk bought in the open market in original packages showed that pasteurized milk, as sold in Chicago to-day, is cleaner than raw milk. It contains less than one-fourth the number of bacteria contained in raw milk. This number would be much smaller if pasteurization were universally of high efficiency. Methods of commercial pasteurization of milk are still in a stage of evolution, but development has progressed to a degree which will insure efficient pasteurization within a few years. Pasteurized milk turns sour the same as raw milk, the process being somewhat delayed, however.

Relation of Parasitic Amebas to Disease

DR. CHARLES F. CRAIG, Medical Corps, U. S. Army: The cultural amebas so far described are all free-living species. There is not sufficient evidence to prove that any of the species which have been cultivated are the cause of dysentery in man or animals. The evidence is conclusive that *Entamœba coli* does not produce dysentery in man, but is a harmless commensal normally present in the intestine of a considerable proportion of healthy individuals in all parts of the world in which search has been made for the parasite. The evidence is conclusive that both *Entamœba histolytica* and *Entamœba tetragena* are capable of producing the lesion of amebic dysentery in susceptible animals and that these species are the cause of a distinct and characteristic form of dysentery in man.

Phenomena of Anaphylaxis in Pellagra Patients Inoculated With the Watery Extract of Spoiled Maize

PROF. GUIDO VOLPINO, Institute of Hygiene Royal University of Turin, Italy: Pellagra patients, when subjected to an inoculation of a certain quantity of watery spoiled maize, either subcutaneously or into the muscles, which are insufficient to produce appreciable phenomena in the great majority of non-pellagrous people, present, after a few hours, and with rare exceptions, a distinct reaction of hypersensibility. Such a reaction manifests itself by dulness, drowsiness and a state of semicoma, or by a strong physical and nervous excitability. Such phenomena are accompanied in either case by a remarkable acceleration of the pulse, dyspnea, rise of temperature as high as 40 C., and often vomiting and increase in peristalsis, with bloody diarrhea, and, sometimes, aggravation of pre-existing eruptions. This hypersensibility has particular characters, which cannot be produced by the injection of watery extract of sound maize.

The substance which determines such a reaction of the watery extract of spoiled maize is obtained by adding a given volume of the grain (deteriorated by mycotic action but not rotten), after having been finely triturated, to 3 or 4 volumes of physiologic salt solution; by keeping the whole in infusion for six hours in a water-bath at 55 C.; by filtering the liquid and by treating it, at last, with twenty times its volume, of absolute alcohol. In such a way a precipitation of the active substance is obtained in white flakes. The active substance thus obtained, to which we have given the name of "pellagrogenina," is soluble in water and not in alcohol; it does not lose its activity at a temperature of 110 to 115 C.; it has only a slight degree of toxicity, both for the trial animals and, in general, for a sound man; it is, on the contrary, decidedly toxic for a man afflicted with pellagra.

The characteristic reaction of hypersensibility in the pellagra patients, which results when the watery raw extract of spoiled maize is injected into his body, is more notable when

the pure pellagrogenina, dissolved in fit quantities of water, is employed. This pure material, when injected into non-pellagrous persons, has never given an appreciable reaction, though tried in numerous cases. The results obtained in about 100 experiments made with this substance cause us to consider it of specific efficiency in the pathogenesis of pellagra, and induces us to propose it as a practical means of anaphylactic reaction for the diagnosis of pellagra. In order to obtain the reaction in an appreciable degree, and without danger to those suspected to be pellagrous, the first injection should be limited to 1 c.c. of a 10 per cent. watery solution (sterilized at 100 C.) of pure pellagrogenina. If no positive result is obtained by a first injection, a double dose may be tried.

Physiologic Significance of Some Substances Used in the Preservation of Foods

DR. JOHN H. LONG, Chicago: A considerable number of substances are added to food largely because of their preservative properties, rather than because of flavors they may impart. Some of the so-called "natural" preservatives come under this head. Modern conditions of living and modern scientific advances have called for the introduction of more efficient bodies, the so-called "chemical" or "artifical" preservatives. Many of these bodies have been condemned, and, perhaps, properly, but frequently the condemnation is solely on the ground of their origin. This basis of condemnation has no justification in fact, as all preservatives are as truly chemical as are those of recent introduction made by industrial processes. The active principles in cloves, cinnamon, allspice, etc., are true chemical compounds and in their action on the body and final disposition are much like benzoic acid, now made largely by laboratory processes.

A number of important investigations on the physiologic action of sodium benzoate have been carried out in the last few years. The effects of large and small amounts of benzoic acid are known, and it has been clearly shown that the use of the small quantities employed in the ordinary protection of the condimental foods is quite unobjectionable. Such small amounts are normally disposed of in the human body without ill effects.

In France and Germany copper salts have long been used in the canning industries. Several commissions have pronounced in favor of permitting the use of copper salts, although others have opposed it. But all authorities have come to agree that the toxicity of these salts is much less than was at one time assumed. This toxicity depends somewhat on the combinations in which the salts are ingested. The effects of copper as used in young peas or string beans are far less marked than are those of inorganic salts. It is, therefore, not quite justifiable to draw conclusions as to the behavior of copper from experiments with copper sulphate alone. If only very young and fresh vegetables, with plenty of chlorophyl, were treated with copper, and if the amount were strictly limited, there might be but little fault found. But with older vegetables the combination is far less stable and the effects approach those of the inorganic salts. The amounts of copper taken up by the liver and other organs from inorganic salts may be considerable, and such absorption cannot be held free from danger. The use of these salts serves no real good purpose and should be condemned.

Public Health Administration

DR. THEODORE THOMSON, chief assistant medical officer of the Local Government Board, London: The central health body is the local government board in England, and this board has absolute supervision over practically every phase of public health administration throughout the country. While the county and municipal divisions select their own officers, in most cases such selections are subject to the approval of the local government board, and this board may supersede any local officer when such action is deemed necessary. The central board may at any time put into force special regulations in the local constituencies for the prevention or subjection of epidemics or epidemic diseases. The board may require the reporting of any particular disease by municipal and county officers, and much of the industrial hygiene work is carried on directly under the supervision and direction of the board.

Some Thoughts on Sanitary Questions Concerning the Immigrant in His Own Country and in the United States of America

DR. JOHN COSTAS, Greece: There should be the enactment of laws by all nations, especially those concerned in the immigration to the United States of America, which will compel each immigrant to undergo a thorough physical examination by one of the physicians of his community before his departure, furnishing him with a certificate which shall be countersigned by the mayor or some other municipal authority. All steamship companies should be furnished with booklets written in all European languages, also in Turkish and Syrian for distribution among the immigrants on board—such circulars to contain the principal sanitary rules and regulations, together with some instructions on the fundamental principles of personal hygiene. It should be the duty of the health officer and his assistants to post in the most conspicuous places in the houses where aliens live placards or notices written both in English and in their own languages; these notices to contain the principal sanitary regulations, together with a notice that any violation would be considered a misdemeanor punishable by fine and imprisonment.

Deleterious Effects of Noises

DR. CLARENCE JOHN BLAKE, Boston: The excess of sound to the internal ear is not merely through the channel of the external ear but through the tissues of the body also and this is especially the case in people working in the midst of noisy machinery or subjected to the clangor and vibration of such occupations as metal manufacturing and circular wood sawing.

Microscopic investigation has shown that subjection to continued, excessive noise and to sudden loud sounds has resulted in changes deleterious to the function of the organ of hearing. Nor is this waste of efficiency incident to changes in the ear alone, mental processes are conducted with less effective sequence when the sensorium is subjected to the inroad of a major sensation, the compensatory effort at control of thought under subjection to a loud and uniformly continuous or to a variable and variously compounded noise, even though, in time, its exercise may become almost subconscious, constitutes another channel of efficiency waste.

What is true of normally resistant human beings with a large supplementary power of compensatory effort is still more true of the ill, the suffering and the feeble, close to the border line of the struggle for the continuation of even a moderately sane existence.

The Prevention of Epilepsy

DR. L. P. CLARK, New York: The necessity of forbidding the marriage of persons exhibiting epileptic conditions or tendencies is formulated in five general rules. These are: More precise study of the family stock from which epileptics are recruited; still further elimination of birth injuries and accidents through better regulated obstetric practice; greater care in rearing neuropathic children; more exhaustive study and regulation of the whole manner of living of potentially epileptic adults, and, of greatest importance, prohibition of intermarriage of neuropathics.

The Production of Antirabic Immunity by Intraspinal Injections of Virus

DR. J. L. HARRIS, St. Louis, Mo.: The problem has arisen in the administration of the Pasteur treatment incident to the length of time which must be allowed to secure immunity to a human being who has been infected through the bite of a rabid dog, horse or other animal. Usually this period must be at least three weeks in length, and only indirect immunization of the brain cells against the infective agent is secured through the injection of the antirabic serum into the abdominal wall. Immediate and direct immunization against rabies may be secured by the injection of fractional parts of a grain of non-infective rabies virus of a special type. The virus is produced from the brain of a rabbit dead of rabies, frozen with carbon-dioxid snow, dried in a vacuum at a very low temperature and kept in an ice-box. This virus will lose its infectivity only after a period of many months.

Influence of Bacillus Carriers in the Dissemination of Infection

DR. CHARLES NORRIS, New York: All employees of hotels, and especially of summer resorts, should be required to present clean bills of health before being employed. The elimination of bacillus carriers from this class of semi-public servants would go a long way toward removing the danger of infection to which the public is exposed.

The Necessity for the Maintenance of Sanitary Department by Common Carriers

DR. ARTHUR M. HUME, Owosso, Mich.: The preservation and safeguarding of the health of the traveling public has been greatly neglected, and railway sanitation has not kept pace with sanitary progress elsewhere. Transportation companies have spent large sums of money and much effort to better these conditions, but often with indifferent results. The reason for this is that sanitarians have not appreciated the obstacles in the way, and the many problems to be solved before railway sanitation can even approach perfection. The sanitary department should devise and apply better methods of car ventilation, car cleaning and sterilization, and better methods for disposing of waste, etc. It should also have supervision of water and food supplies, to the end that purity of both would be assured; and it should further supervise the maintenance of proper sewerage and drainage of railway stations and the cleaning and keeping clean of stations and passenger equipment. Such departments, maintained by the railways, should cooperate with state boards of health. Such cooperation would result in essentially uniform laws governing interstate railways and the production of uniformly bettered sanitary conditions on all transportation lines.

Analysis of Antityphoid Vaccines, with a Consideration of Their Relative Practical Value

DR. HENRY J. NICHOLS, U. S. Army Medical Corps: Less than 5 per cent. of persons who have typhoid ever have it the second time, and it has been the effort of the scientists to find a way by which natural immunization may be imitated by means of a vaccine which, when introduced into the system, will, in effect, produce a mild case of typhoid and consequent immunity from real attacks. The vaccine most used in the English and American armies is a culture of killed typhoid germs in a solution of salt. This vaccine is absolutely safe and can do no harm to persons in good health. It is administered hypodermically in three doses, one week apart, and immunizes for several years, the exact length of immunity not yet being known. Another form of vaccine contains the living germs of typhoid, weakened in various ways until they are unable to grow and produce the real disease. This vaccine is very efficient, but has not been largely used, as it is not known whether it is as safe as the vaccine of the killed germs. Another vaccine is made by partly dissolving the germs in salt solution and using the clear fluid. This is safe, but it is not known whether it is as effective a protection as the whole germ vaccine.

Influenza Meningitis; Experimental and Clinical

DR. MARTHA WOLLSTEIN, New York City: Influenza meningitis in human beings, a disease with such a high rate of mortality that there are only six recovered cases on record, soon may be brought within the control of medical science. Influenza meningitis is more common in infants than in older children and adults, and only two babies less than a year old have recovered from the disease among the thirty cases which have been reported at that early age. An immune serum may be prepared by inoculating a goat with increased doses of influenza bacilli. This anti-influenza serum was injected into the spinal canals of monkeys which had been inoculated and were suffering from influenza meningitis, and it brought about a complete cure. The animals fully recovered in one week after receiving the treatment.

Sanitary Measures Against Cerebrospinal Meningitis

DR. ABRAHAM SOPHIAN, New York City: Eleven medical students who volunteered were vaccinated, their blood was examined and studied regularly for protective substances, and it was found that vaccination produced a high degree of immunity against the infective agent of meningitis.

Recent Progress in Antimalarial Work With Special Reference to Anopheles Fight as Studied on the Isthmus of Panama

DR. J. A. LE PRINCE, Ancon, Canal Zone: The splendid record made by the army engineers in digging the Panama Canal is not the only noteworthy achievement in the canal work, but the Sanitary Department of the Canal Commission has been digging into the unknown pertaining to malaria, and the output has been gratifyingly large, even if it is not expressed in cubic yards. The new methods discovered and now in use by the Department of Sanitation in waging war on malaria include special sub-drainage systems which practically eliminate maintenance cost; permanent reinforced concrete ditch linings of wire mesh with a mere shell of concrete; the use of the *Anopheles* mosquito traps which cause the malaria-carrying mosquitoes to kill themselves by thousands; automatic mechanical oiling devices to prevent mosquito propagation. Long and careful investigation has proved that the malaria mosquito flies long distances, against light winds, and that therefore the sphere of activity of a given breeding ground is not, as has heretofore been thought, confined to a circumscribed area lying near the breeding ground. As a result of the scientific investigations and the adoption of modern, new scientific methods of combating the disease and destroying the insects that carry it, the sick roll in the Zone hospitals for July, 1912, was 75 per cent. less than for the same period six years ago.

Nutrition and Bone Growth

DR. FRANCIS H. MCCRUDDEN, New York City: The question of the nature of bone metabolism in health and disease is one that until recently can hardly be said to have been attacked experimentally. Pathologists have generally considered mature bone as a dead tissue not undergoing metabolism. This opinion has colored their views regarding the nature of the process in various bone diseases. In osteomalacia, for example, it has been supposed that the process is due to the action of an acid which dissolves out the mineral constituents.

Numerous investigations, chemical, histologic and clinical, during the last few years have shown that these views regarding the nature of the process in osteomalacia and the nature of normal bone metabolism cannot be correct. Bone, like the other tissues, undergoes metabolism throughout life. Old bone is continuously being resorbed and new bone laid down. If the new bone laid down is not qualitatively of the right composition, the result may be rickets, osteomalacia, osteoporosis or osteitis deformans, depending on the age of the patient and other factors. The bones act as a storehouse of lime salts to be called on in time of need, just as the subcutaneous tissue acts as a storehouse of fat, and the liver as a storehouse of glycogen; and a flux of calcium from the bones started by a growing fetus, a hardening callus, metastatic bone formation, etc., may, under certain circumstances, lead to decalcification enough to result in osteomalacia and similar conditions. An important factor is the degree to which overproduction takes place, a factor involved also in immunity and, in fact, in all tissue repair.

Other disturbances which may be said to involve quantitative disturbance in bone growth—the rate of growth—rather than disturbances in the qualitative character of the bone produced, are the various types of dwarfism. In some of these the failure to grow seems to depend on an absence of the "growing tendency" on the part of the bones; in others, some disturbance in the supply of lime salts available for bone growth seems to be at fault.

Infant Mortality and Its Relation to the Employment of Mothers in Fall River, Mass.

MR. CHARLES H. VERRILL, Department of Commerce and Labor, Washington, D. C.: The Fall River infant mortality rate, 177.6 per 1,000 births, is excessively high as compared with other localities. The excess is very largely due to preventable causes. An attempt to visit the homes and secure information bearing on the causes of death of 859 children dying under 1 year in 1908 was successful in 580 cases.

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Information was also secured for 165 out of 227 still-born children. The distribution of causes of death among the children traced and among those not traced showed no substantial difference between the two classes. From the information thus secured the following appears: Mothers at work outside the home during pregnancy: 45.9 per cent. The percentage of deaths from premature birth, congenital malformation and congenital debility was found not greater among the children of mothers at work than among the children of mothers at home. Equally favorable to work outside the home was a comparison of the percentage of children not well and strong at birth and of stillbirths.

Mothers at work outside the home after childbirth and while child was living: 14.4 per cent., but only 7.7 per cent. of all mothers were prevented from nursing or continuing nursing by the fact of going to work, the other mothers using artificial food for reasons having no relation to the going to work. Among children whose mothers went to work, 62.7 per cent. died of diarrhea, enteritis and gastritis, as compared with 34.6 per cent. among children of mothers at home. The high infant mortality among both children of mothers at home and of mothers at work was due to improper feeding and care. The percentage of deaths from diarrhea, enteritis and gastritis was 26.0 among children breast-fed exclusively, 27.5 among those given cow's milk exclusively, and 51.7 for all others. Only 28.8 per cent. of all children were breast-fed exclusively. The reason for not nursing was in many instances deficiency of breast milk, but in many cases artificial feeding was not due to deficiency of breast milk or to the mother's going to work.

The causes of the excessive infant mortality in Fall River are in short the mothers' ignorance of proper feeding, of proper care, and of the simplest requirements of hygiene. To this all the other causes are secondary.

Teachers in Public Health

DR. F. F. WESBROOK, Minneapolis: In America we are optimistically inclined to believe that the time has come when a demand will be made for trained specialists who shall devote their whole time and energy to the various phases of public health protection. We must be ready to adjust the pay and authority of our health officials to the responsibilities which the public expects them to assume. We must guarantee them tenure of office dependent alone on efficiency. We must insist that they be trained before they assume office and not expect them to gain their experience at the expense of the public.

It is probable that under ordinary circumstances a medical man trained by years of service in actual sanitary work should be at the head of the department. He should consult frequently with the various medical, scientific and laboratory teachers so as to see that a proper foundation of technical facts and methods is laid. It should be his function to see that all teaching done by himself and others is properly coordinated, assimilated and applied. In public health, basic teaching is already provided in a number of laboratory and clinical departments, but it will be the duty of the department of public health to classify, arrange and coordinate this teaching in its application to the needs of the physician in his work of teaching personal hygiene to his patients and their families and of articulating with municipal, state and federal public health authorities and public health movements in general. In the ultimate analysis no official public health protective mechanism can operate without the intelligent and sympathetic interest and support of the medical profession, since its members are responsible for individual and family welfare, which in the mass represents public health.

Working Man's Insurance

DR. FRIEDRICH ZAHN, Munich, Germany: The people and the people's strength is the greatest asset of the nation. In the course of years the German working man's insurance has attained the dimension of a gigantic social institution, which is of importance in furthering hygienic and general conditions. Out of 16,000,000 laborers in Germany 14,000,000 are carrying sick insurance; 15,700,000 are carrying invalid and old age insurance, and with the artisans in small manufacturing establishments included, 24,200,000 workmen are carrying accident insurance. From 1885 to 1910, 100,000,000 sick, disabled and injured people and their relatives have received the benefits through insurance. In benefits there have been paid out 8,400,000,000 marks. About 2,000,000 marks were spent daily for this tremendous institution of working men's aid. The most important thing is not the material compensation, but the maintenance of energy and activity, which tends to increase the productive power of the working class through the abolition of the causes of sickness, injury and invalidism. The German working man's insurance, therefore, maintains its equilibrium through a quicker restitution of the working ability of the laboring class, the development of a generation with the increased powers of resistance, and the education of the community in the potent value of sanitary self-defense.

Effects of Industrial Strain on the Working Woman

DR. ROSALIE SLAUGHTER MORTON, New York City: With properly regulated hours of work and recreation, outside of excessive physical labor, women may work in practically any field of modern industry, and not only retain but increase their standard of health if they are given hygienic and properly arranged buildings in which to work, if they and their employers are taught the common sense laws of health.

Prevention of Typhoid

DR. FORNET, Berlin, Germany: Three-fourths of the cases of typhoid can be traced to typhoid carriers, and since it is impracticable to cure or eliminate these carriers, the only practical scheme for the eradication of the fever in civil communities and in military service is the use of vaccines.

Municipal Clinic of San Francisco

DR. JULIUS ROSENSTIRN, San Francisco: This clinic is operated by a citizens' committee. The staff of the clinic consists of a superintendent and two female clerks, a chief clinician an assistant clinician, a female physician, a bacteriologist, a trained nurse, a matron and a janitor. Physical examination of infected persons is compulsory and each person registered is supposed to report every five days. The only fee charged is 50 cents for each patient. The clinic is entirely supported by means of this fee. This clinic may be considered a sane humane and sanitary regulation of the social evil.

The Rôle of Bovine Tuberculosis in the Production of Human Tuberculosis

This subject was discussed by PROF. DR. A. WEBER, Berlin; DR. WM. H. PARK, New York City; DR. M. P. RAVENEL, Wisconsin; DR. RAMSEY SMITH, South Australia, and DR. BERTRAM H. WATERS, of the New York Department of Health. The discussion showed that the danger of bovine infection must not be minimized, although the spread of tuberculosis is far more general from human sources than from animal sources. Bovine infection is responsible for most of the less fatal forms of the disease.

DR. B. H. WATERS: The only means by which the spread of tuberculosis from human agencies may be controlled is through the dispensary and registration systems.

DR. W. H. PARK: Bovine tuberculosis is responsible for the disease in 7 per cent. of the children of New York City under five years of age. It frequently attacks the lymph glands of children ranging from six to sixteen years of age. Bovine tuberculosis is rarely fatal in children of more than five years of age. If all children were fed on cow's milk, 50 instead of 6 per cent. of the tuberculosis cases would be of bovine origin

Milk Depots

DR. JANET LANE-CLAYPON, University of London: Milk depots have failed in England. Their establishment and operation do not tend to encourage the natural feeding of babies by the mothers, and under the broadest consideration cannot be said to be great aids in reducing the infant mortality of England's congested centers.

Control of Sanitary Condition of Food Factories

MR. H. E. BARNARD, Food and Drug Commissioner of Indiana: At the present time the baker who bakes the bread, the driver who delivers it, the grocer and his clerk, the candy-dipper and the girl who packs crackers in cartons, the cook and

the waiter, are uninspected and their condition of health unknown. The annual convention of food commissioners, held in July, at Seattle, recognized the necessity of such a certificate of health, and went on record as favoring compulsory examination as a requirement to employment and further examination repeated sufficiently often to make sure that the worker with the food-supply is always sound in body and clean, physically and morally. The time is not far distant when the food manufacturer and distributor, the hotel proprietor and restaurant keeper will recognize their duty to the public, and the good business policy of eliminating the physically unfit from the ranks of the handlers of the food-supply.

AMERICAN ROENTGEN RAY SOCIETY

Thirteenth Annual Meeting, held at Niagara Falls, N. Y., Sept. 11-14, 1912

(Concluded from page 1397)

Roentgenoscopy in Fracture of the Skull

DR. WILLIAM H. STEWART, New York: In a considerable number of cases which I have diagnosed, the Roentgen examination quickly and accurately determined the presence of fracture and its nature. Little is said in the literature about the use of the Roentgen ray in these cases, and yet there are any number of cases of fracture of the skull in which the diagnosis cannot be made except by the aid of the Roentgen ray. I refer especially to those cases in which no symptoms are manifested, either objective or subjective, only a history of a fall being obtainable. The technic is not difficult, and the results are eminently satisfactory. Roentgenoscopy undoubtedly is the most valuable diagnostic means in any case of fracture of the skull.

Roentgen Therapy of Non-Malignant Laryngeal Vegetations

DR. A. L. GRAY, Richmond, Va.: I have treated four of these cases with uniformly favorable results. In two cases there was a single growth; one involved the anterior portion of the right ventricle, and the right vocal cord, while the other involved the middle of the right cord. The remaining cases were multiple, involving both cords and extending to the epiglottis and trachea. In one case the treatments were given with a static machine; in the remaining three cases the induction-coil was used. The treatments extended over a considerable period of time, but this was time well spent in that all four patients made a complete recovery. One of the patients died four years after the cure from an acute infection following the removal of the tonsils. Whether the apparent cures were instances of spontaneous recovery or the result of the treatment used I cannot say. I believe, however, that the clinical course of these cases justifies the assumption that the Roentgen ray was the curative agent. Little attention was paid to the thyroid gland during the treatment. As yet there is no reason to believe that any ill effects resulted from such exposure.

DISCUSSION

DR. P. M. HICKEY, Detroit: I have tried fulguration in one case of papilloma of the larynx. The patient was about 2 years old and had been tracheotomized. Every time I turned on the spark the child stopped breathing, and we had to resort to artificial respiration. I examined the patient two weeks later with a Jackson tube, and there was no sign of papilloma. The epiglottis and cords were clean—the whole picture was that of a normal larynx. I examined the patient again three weeks later and found more papillomas in the larynx than were present before. I began my treatment. These tumors have a low grade of vitality and are easily influenced by Roentgen therapy, but they recur nevertheless. That is a point to bear in mind.

DR. H. K. PANCOAST, Philadelphia: I treated one child for papilloma of the larynx three years ago. According to the last report from the family physician, there has been no recurrence up to the present.

DR. GEORGE C. JOHNSTON, Pittsburgh, Pa.: I have had three of these patients, but they are all dead. One man came to me when he had only a chronic hoarseness which was, however, rapidly becoming an aphonia. There was only a low-grade congestion in one of his vocal cords and a laryngologist advised immediate Roentgen irradiation. In spite of my treatment the man developed an epithelioma of the larynx and died. Hereafter I shall split open the larynx and ray the entire interior, which I think will produce good results.

DR. A. L. GRAY, Richmond, Va.: If it is necessary to keep a tube in the larynx during the treatment, an aluminum tube should be used. I have had no experience treating malignant growths in the larynx. I think Dr. Johnston's suggestion of laying the larynx wide open and treating the interior directly is a good one. Six years ago I took advantage of a suprapubic cystotomy to treat a squamous carcinoma of the bladder. The patient made a good recovery and has not had a recurrence since then.

What Is the Roentgen Picture of Bone Tuberculosis?

DR. ROLAND HAMMOND, Providence, R. I.: The typical picture of bone tuberculosis is due to the bony atrophy caused by the disappearance of lime salts. This atrophy first appears as a diminution in the size of the bone, and later as an increase in radiability of the texture of the bone. In addition to this will usually be found loss of contour of the bones forming the articulation, with the fuzzy, shaggy appearance denoting necrosis, and the denser shadow of the soft parts due to the presence of fluid and by infiltration. Later there may be a localized area of necrosis, often filled with pus and débris, which casts a shadow of varying distinctness according to the density of the contained matter, and after this sequestra may form. As the process goes on to healing, there is a return to the smooth, regular bony outline, and as the healing ostitis becomes marked the shadow is denser than in normal bone.

In the differential diagnosis of bone tuberculosis, the main points are as follows: In syphilis the bone is not translucent, but rather porous, and the periosteum and cortex show as dense shadows; at times there is partial obliteration of the medullary cavity. In rachitis the pathologic process is most active near the epiphyseal line, but the bone outlines are clear except for a "flaming out" and cup-shaped defect of the diaphysis. Scurvy shows a hammered-out epiphysis, giving the horizontal, irregular shadow characteristic of this disease; the subperiosteal hemorrhages are also typical when present. Osteomyelitis is more likely to cause confusion in interpreting the skiagram when the condition happens to be the rare one of tuberculosis of the shaft. Often it may be impossible to distinguish between the two by the Roentgen plate alone. The punched-out areas of increased radiability and the bone atrophy are present, but the periosteal involvement is not found in tuberculosis, except in disease of the shaft. Osteosarcoma rarely involves the neighborhood of the epiphyses, and the atrophy is localized. It pushes up or involves the periosteum and is sharply differentiated as a rule from the rest of the bone structure. Bone cysts are always sharply differentiated spaces within the bone, which is healthy everywhere else.

If used in connection with a clinical study of the case, the Roentgen plate gives an accurate means of diagnosing bone and joint tuberculosis.

DISCUSSION

DR. P. M. HICKEY, Detroit: It is only a question of technic, I think, as to whether changes in the bones resulting from tuberculosis can be distinguished. We ought to be able to see them in the skiagram when the surgeon can find them at the operation. The picture is characteristic, but we must be able to see it clearly in order to make the diagnosis. I think that variations in tube vacuum will help.

DR. SIDNEY LANGE, Cincinnati: In some cases of bone tuberculosis in which there is simply bone atrophy with haziness, but no gross destruction, the question arises as to whether the surgeon shall excise or not. I always ask him to add about 20 per cent. more involvement of the bone than the plate shows. At the operation the bone is usually found about 20 per cent. softer, and the disease extends about 20 per cent. further into the bone than is apparent in the skiagram.

DR. A. COTTON, Baltimore: Typical cases of bone tuberculosis show certain characteristic changes. There is a destruc-

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tion of bone from necrosis with bone atrophy and a hazy, fuzzy appearance, the result of pus. That picture is characteristic and cannot be confused with any other condition. Syphilis is easily differentiated from tuberculosis because in that disease new bone forms under the periosteum. Tuberculosis is a destructive process without the destruction of the bone in the periosteum.

DR. F. H. BAETJER, Baltimore: I have always looked on tuberculosis as a joint-trouble involving the bone in the vicinity of the joint. I have never seen a periostitis with it. Of course, I rule out here short bones.

DR. R. H. HAMMOND, Providence, R. I.: I do not know of any way, roentgenographically, to differentiate cases of osteomyelitis and syphilis from tuberculosis. We must not depend on any one method of diagnosis. The Roentgen examination is only a part of the clinical examination. We must consider the whole picture together. Dr. Lange's suggestion to tell the surgeon to add 20 per cent. to the findings in the skiagram is a good one. These cases look just like an osteomyelitis of the ordinary infectious type, and until I saw a pathologic examination I would have made that diagnosis. When we find the tuberculous process and when a careful examination by the pathologist fails to reveal anything else, I think we are justified in making that diagnosis, especially when we consider that men like Murphy and Stiles agree that there is a certain percentage of tuberculosis of the shaft of the bone. There is no reason why the disease should be limited to the epiphyseal region. Take the "tuberculous rheumatism" of Poncet. Some years ago we would have said that such a diagnosis was a mistake, but I have seen cases recently which were undoubtedly cases of multiple tuberculosis. I had one case in which at least four joints were involved. We must revise our ideas on this subject.

Circulatory Opacity

DR. E. H. SKINNER, Kansas City, Mo.: While no attempt has been made to produce skiagrams in the living subject by the use of colloidal salts of silver in the blood-stream, we have injected the blood-vessels of an amputated arm and obtained fair views of the blood-vessels and capillaries. The negatives were made with a 12-inch coil and no doubt could be wonderfully improved with a transformer and intensifying screen.

The Roentgen Ray as an Aid in the Diagnosis of Diseases of the Sphenoid Sinus

DR. GEORGE E. PFAHLER, Philadelphia: The diagnosis of sphenoidal disease at best is not an easy matter, and often requires repeated examinations before a purulent secretion can be traced to its origin. General symptoms may be marked, and the local symptoms mild or entirely absent. A resection of one or both turbinates is often necessary before the sphenoidal wall is accessible to inspection and subsequent instrumentation. The Roentgen rays have proved of the greatest definite diagnostic value in this condition. From a rhinologist's point of view, the important facts elicited are: (1) the difference in the shadow intensity of the two sides; (2) whether the shadow or abnormal opacity also involves the posterior ethmoid cells; (3) the size of the sphenoid sinus; (4) the distance between the anterior wall and the vestibulum nari; (5) the shape of the sphenoid sinus with special reference to the posterior or cerebral and the lateral wall. The first and second are of importance for diagnosis, and the third, fourth and fifth for operative purposes.

Examinations should be complete, and this involves a study of the other accessory sinuses as well. From four to six or more exposures are required; at least two postero-anterior and one lateral are essential. This is then made more complete by making two lateral views stereoscopically and adding two oblique views. In exceptional cases a vertical or antero-posterior view is needed. Not only are the rays useful in diagnosing catarrhal and purulent disease of the sphenoidal sinuses, but valuable information will be obtained also in demorstrating the extent of new growths, so that a complete operation can be done when advisable, or a meddlesome operation may be avoided. Much depends on the making of good negatives, but more on skilful interpretations.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

October, CXLIV, No. 4, pp. 469-624

1 Defective Development from Arthritis in Early Life. G. Dock, St. Louis.
2 *Metabolism and Successful Treatment of Chronic Joint Disease. R. Pemberton, Philadelphia.
3 Healing of Gastric and Duodenal Ulcers with Bismuth. C. D. Aaron, Detroit.
4 *Bacteriology of Peritonitis, with Special Reference to Primary Peritonitis. M. Fishbein, Chicago.
5 *Prognostic Significance of Atropin Reaction in Cardiac Disease. J. E. Talley, Philadelphia.
6 *Therapeutic Use of Tuberculin; a Working Hypothesis and Personal Observations. L. Brown, Saranac Lake, N. Y.
7 Rest vs. Climate in Treatment of Pulmonary Tuberculosis. W. C. Voorsanger, San Francisco.
8 *Diabetes Mellitus and Tuberculosis. C. M. Montgomery, Philadelphia.
9 Prognostic Value of Arneth's Leukocytic Blood-Picture in Pulmonary Tuberculosis, Based on 729 Counts in 475 Patients. P. H. Ringer, Asheville, N. C.
10 Changes in Kidney Resulting from Tying Ureter. J. F. Corbett, Minneapolis.
11 Clinical Manifestations of Illuminating-Gas Poisoning. R. S. McCombs, Philadelphia.

2. **Metabolism and Treatment of Joint Disease.**—Pemberton is convinced that certain joint cases which are rebellious to all other means of treatment, as proved by long trial, can be arrested by means of a proper dietary (containing much buttermilk) coupled with colonic lavage. The dietary can be so greatly modified during the course of improvement as eventually to differ but slightly from that of a normal individual, and the lavage can be quickly dispensed with entirely. Coincident with the improvement there may occur an increased output of ethereal sulphates and an increased output of fecal bacteria. The former of these is not out of consonance with the view suggested by certain clinical evidence that the carbohydrates are of hitherto unsuspected importance in this connection. The adoption of these methods should not be attempted except in cases suitably prepared for it or in those free from demonstrably removable cause. These methods should be applied gradually, with due respect for the caloric needs of the individual, and with constant regard for the weight.

4. **Bacteriology of Peritonitis.**—In eighteen cases of which Fishbein studied the records, pneumonia existed, with large numbers of pneumococci in the lung and circulation. In seven cases there was an associated endocarditis, chronic in type, and often also pleuritis. In four cases hyperplasia of lymphoid tissue was marked. In four cases suppurative foci were present elsewhere in the body, distant from the peritoneum. Besides these, there was one case of marasmus in tuberculosis, one case of premature birth with congenital syphilis, and a case of generalized blastomycosis. In three cases a cirrhosis of the liver was present. Peritonitis would seem, in the light of Fishbein's results, to be most commonly associated bacteriologically with a combination of the *Bacillus coli* and other organisms, usually staphylococci and streptococci. The origin clinically is usually endogenous, affections of the appendix being of major importance, the female organs of generation being next in importance. Exogenous peritonitis is becoming exceedingly rare with improvement of aseptic technic in the handling of wounds and in operative methods.

5. **Atropin Reaction in Cardiac Disease.**—The atropin reaction in the normal heart is probably from 30 to 40. A reaction of 20 or less, in a heart not recently subjected to exhausting disease, Talley says, points to a degenerative process in the cardiac tissue which makes the outlook for improvement under treatment unpromising. Cases of auricular fibrillation with responses normal or above are promising subjects for treatment. Two atropin reactions in cases of auricular fibrillation, one before and one on full digitalis, enable one to determine whether the vagal or the cardiac tissue factor is the greater. The patients with a large cardiac tissue factor are the ones who usually are sufficiently improved by treatment to return to their occupations.

6. **Therapeutic Use of Tuberculin.**—Brown's observation leads him to believe that incipient cases treated with tuber-

culin do somewhat better than those not so treated, while the moderately advanced cases do much better. The ultimate results do not show such marked differences, but indicate that the treated, both incipient and moderately advanced, do better.

8. **Diabetes Mellitus and Tuberculosis.**—Out of 111 cases of diabetes collected by Montgomery in the hospitals of Philadelphia, nine had active pulmonary tuberculosis, and one other had adrenal tuberculosis. Out of fifty-one non-fatal cases of diabetes, none had active pulmonary tuberculosis. Out of sixty fatal cases of diabetes, nine had active pulmonary tuberculosis and one other had adrenal tuberculosis. Out of thirty-five fatal but non-autopsied cases of diabetes, three had active pulmonary tuberculosis. Out of twenty-five postmortems, six showed active pulmonary tuberculosis and one tuberculosis of the adrenal gland without tuberculosis elsewhere. Out of eighty-six non-autopsied cases (thirty-five fatal) three had active pulmonary tuberculosis and seventeen more had signs recorded that were only slightly suggestive of tuberculosis. That tuberculosis occurs more frequently in diabetics than in the general population at the same age periods has not been definitely proved by the evidence collected by Montgomery. However, he is impressed by two facts: (1) The lower opsonic index to the tubercle bacillus and a number of other bacteria in diabetes; and (2) the large number of patients with diabetes late in the course of the disease developing a very acute, extensive and rapidly fatal form of pulmonary tuberculosis. Tuberculosis occurs more frequently in diabetes than in some other chronic diseases. The frequency of tuberculosis in diabetes varies with a great variety of different circumstances.

In Montgomery's twenty-five collected autopsies on diabetic patients, six showed active pulmonary tuberculosis varying in acuteness and extent of involvement, and one showed adrenal tuberculosis without tuberculosis elsewhere. Out of 355 autopsies collected from the literature since 1882, including also Montgomery's twenty-five cases, 138 (38.9 per cent.) revealed pulmonary tuberculosis, mostly in an acute form. In some structures, for example, the bones, the writer could not find a single case of tuberculosis in a diabetic patient. The frequency of diabetes in cases of tuberculosis is fairly well represented by a table presenting 31,834 cases of pulmonary tuberculosis, of which about one-third of 1 per cent. had glycosuria, and between one-sixth and one-third of 1 per cent. had diabetes. Five cases of diabetes were found in 937 autopsies on tuberculous patients. When diabetes and tuberculosis are associated the diabetes can usually be shown to be the primary disease, in a number of cases it is impossible to show which is the primary disease, and in no case that Montgomery has encountered has the tuberculosis been definitely proved by the evidence furnished to be the primary disease. When diabetes and tuberculosis are associated in the same patient either disease may show certain modifications in course and symptomatology, but often each disease runs a course apparently independent of the other. From the number of cases that have improved both as to their tuberculosis and their diabetes, Montgomery says one cannot consider the combination of diabetes and tuberculosis as necessarily more hopeless than the diabetes or the tuberculosis alone. The prognosis in many cases depends largely on the treatment.

Bulletin of Manila Medical Society

August, IV, No. 8, pp. 147-154

12 Study in Human Nutrition. A. O. Shaklee and D. de la Paz, Manila.

Delaware State Medical Journal, Wilmington

September, III, No. 10, pp. 1-26

13 Anodynes and Oxytocics in Labor. I. Richter.
14 Hemophilia Complicating Typhoid. H. J. Simmons, Wilmington.

Annals of Surgery, Philadelphia

September, LVI, No. 3, pp. 377-520

15 *Bone Transplantation and Use of a Rib as a Graft. C. A. McWilliams, New York.
16 Unusual Sinus Frontalis. J. P. Schaeffer, New Haven, Conn.
17 Bilateral Congenital Fistula of Lower Lip. C. B. G. De Nancrede, Ann Arbor, Mich.
18 Intrathoracic Surgery: Division and Circular Suture of Thoracic Aorta. W. M. Boothby, Boston.
19 Transplantation of Fresh Venous Segments. W. M. Boothby, Boston.
20 Results of Ligation of One Ureter. L. Frand and L. Baldauf, Louisville, Ky.
21 Appendix Tumor. F. E. McKenty, Montreal.
22 Foreign Body Appendicitis. R. H. Fowler, Brooklyn.
23 Relation of Ileocecal Folds to Appendectomy. J. D. Guyot, Dallas, Tex.
24 *Fractures of Greater Tuberosity of Humerus. D. B. Phemister, Chicago.
25 Separation of Epiphysis of First Metacarpal Bone. W. P. Coues, Boston.
26 Operating-Room Mirror. D. C. Balfour, Rochester, Minn.

15. **Bone Transplantation.**—Ribs have been transplanted by McWilliams in two cases. In one case a rib was grafted into a defect in the lower jaw. The seventh rib was subperiosteally resected, without opening the pleura, by passing a Gigli saw anteriorly just external to its cartilage, beneath the rib, between it and the separated periosteum. The necessary length, as measured by a rubber tissue pattern, was separated from its periosteum and divided posteriorly by a rib shears. The anterior edge was shaved off so that it would be fresh. Six holes were then bored through the body of the rib at various distances apart, so that nourishment could get into the interior of the bone. The anterior edge of the rib was then fastened to the lower jaw by a chromic gut suture passed through a hole in the rib and to the fibrous tissue surrounding the lower jaw. Posteriorly the end of the rib rested in a cavity in front of and just above the external auditory meatus. The curve of the rib was just sufficient to fill in the curve of the cheek. Two months after the transplantation, the rib had solidly united to the jaw in front, and there was no sign of any breaking down.

In a second case he strengthened the inguinal canal in a case of hernia by transplanting a rib into it. The canal was opened, the sac isolated, transfixed and amputated. McWilliams then subperiosteally removed 4 inches of a rib from patient's right chest, but found that it was too long, so cut about an inch of it off. The rib was then placed under or behind the transversalis tendon lying on the transversalis fascia, its internal end being held against the cord, which was slightly pushed outward by the rib. Prior to its being implanted, however, five holes were bored through the body of the rib so that nourishment would have better access to the interior of the implant. No sutures were used to hold the rib in position, as it remained in place without them. Over the rib the canal was repaired by the regular Bassini method, the cord lying on the internal oblique muscle, which was sutured to the deep part of Poupart's ligament by interrupted chromic sutures. The wound healed by perfect primary union. There has been no irritation from its presence whatsoever. This was done six months ago. McWilliams has also done considerable experimental bone transplantation work. He has had no success whatsoever in transplanting joints.

24. **Fractures of Tuberosity of Humerus.**—In order to avoid all injury either to the deltoid muscle or to its nerve-supply and to obtain a complete exposure both of the seat of the fracture and of the muscles attached to the broken off tuberosity, an angular incision is made by Phemister from the tip of the acromion backward over the entire length of the spine of the scapula and then downward along the posterior border of the deltoid, after which an osteoplastic resection of the origin of the deltoid is made and the musculocutaneous flap turned forward. This route was first used by Kocher for resection of the shoulder-joint. Perthes employed it in operating for habitual dislocation of the shoulder and Druner for removal of a sarcoma of the posterior superior humeral region. No record could be found by Phemister of its employment for fracture of the tuberculum majus. Two cases are reported.

Therapeutic Gazette, Detroit, Mich.

September 15, XXXVI, No. 9, pp. 609-684

27 Prenatal Care of Infant. E. P. Davis, Philadelphia.
28 What Obstetrician Can Do to Reduce Infant Mortality. B. M. Anspach, Philadelphia.
29 Management of Labor, with Special Consideration of Preservation of Child's Life. R. C. Norris, Philadelphia.
30 Modern Conception of Gout and Its Latest Treatment. H. A. Bosma, New York.

American Journal of Diseases of Children, Chicago

October, IV, No. 4, pp. 197-264

31 *Blood-Cultures During Life in Infants and Young Children, with Description of New Technic. M. Wollstein and E. Morgan, New York.
32 *Pancreatic Ferments in Infants. A. F. Hess, New York.

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33 *Infantile Eczema and Indigestion. H. P. Towle and F. B. Talbot, Boston.
34 *Intestinal Toxemia in New-Born Infant. J. L. Morse, Boston.
35 Studies in Metabolism of Amaurotic Family Idiocy. H. Heiman, S. Bookman and B. B. Crohn, New York.

31. **Blood-Cultures in Infants and Children.**—The authors believe that the method followed by them is an improvement on any which has been previously reported. The blood was taken from the external jugular vein in all the cases in the series except three. In the three exceptions the vein chosen was the superficial temporal in two cases and the median basilic in one. The patient having been tightly wrapped in a sheet, was placed on a table. The head was turned to one side, hyperextended over the end of the table and supported in that position. The operator's hands were sterilized in the usual manner. The site of aspiration was washed with alcohol and dried, after which tincture of iodin was applied and allowed to remain for three minutes. The entrance into the vein was most readily effected during a paroxysm of crying when the vessel was distended. Digital pressure above the clavicle they have found to be practically valueless in increasing the prominence of the vein. A 2-c.c. Luer syringe was used with a 22-gauge needle 1.5 c.m. in length. The needle was inserted into the vein in the direction of the blood-current and 1 c.c. of blood was drawn off and transferred directly to 30 c.c. of bouillon. Broth of a reaction of + 0.5 per cent. of phenolphthalein was used in making these cultures.

There were thirteen cases of lobar pneumonia in the series, in four of which the pneumococcus was found in the blood, accompanied in one instance by *Bacillus influenzæ*. All of the thirteen children recovered, so that the blood-cultures were of no prognostic value in this series. All four positive cultures were obtained before the crisis, though in six of the negative cases the blood was also taken while the temperature was still high. Twenty-six cases of bronchopneumonia were studied, with six positive results. The pneumococcus was found four times and the streptococcus twice. Both children with streptococcus and one with pneumococcus infection died, while three pneumococcus patients recovered. The cocci were found in the blood on the second, fourth and twelfth days in the fatal cases and on the third, seventh and eighth days in the patients who recovered. So that no prognostic value could be ascribed to the date of positive blood-cultures in these twenty-six cases. Fourteen children with empyema gave positive blood-cultures nine times; in all but one the pneumococcus was the bacterium found. Six children among the positive cases died, while only one of the negative cases resulted fatally. Three of the infants with positive cultures had pneumococcus meningitis as well as empyema. It would seem, then, that bacteriemia in this series of empyema patients was a bad prognostic sign in about 55 per cent. of the cases, and that it sometimes meant infection of another serous membrane. The single example of streptococcus empyema in this series of cases recovered. Six cases of meningitis included three of the tuberculous form, one of the meningococcus, one of the pneumococcus, and one of the streptococcus varieties. The last two gave positive blood-cultures; the other four did not. The child with meningococcus meningitis recovered after treatment with antimeningococcus serum. All the rest were fatal, as was to be expected, the meningitis being the terminal lesion in a general infection.

There were four cases of rheumatism in children three and four years old. None gave a positive blood-culture though two children had acute endocarditis, one had an acute exacerbation of an old endocarditis, and one had chorea. Two patients died, but only one came to autopsy, and her heart's-blood after death gave no growth. In one case of malignant endocarditis the child had a streptococcus bacteriemia and died on the twenty-fifth day of the disease. A case of erysipelas gave a negative blood-culture on the sixth and seventh days of the disease, but on the eleventh day the streptococcus was found in the blood and the patient died on the seventeenth day. The only case in which the aurococcus was found in the blood was a child ten days old, who had been admitted with omphalitis and suppurative arthritis of the wrist from which the same organism was grown. The baby died.

32. **Pancreatic Ferments in Infants.**—A considerable number of new-born infants were tested by Hess before they had been put to the breast. It is of physiologic rather than of clinical interest to note that without the stimulus of food to incite secretion, the three pancreatic ferments were found in the intestine. During the first week of life the amount of the pancreatic secretion is still very scanty, but it contains the starch splitting enzyme with increased regularity. In older infants, a month or more of age, there is both an increase in the quantity of pancreatic juice, and a decided augmentation of its amylolytic power. Hess was unable to demonstrate a selective activity of the pancreatic juice—such as an increased strength of amylase when barley water was mixed with the milk, or of lipase when the percentage of fat was increased. The secretion of a large amount of amylase by the nursing baby would also argue against absolute specificity in this regard.

Some sick infants were tested. It was soon evident, in a study of marasmus, that the hypothesis is untenable, which suggests that this disease is associated with or is caused by a deficiency of these ferments. Even in advanced cases they were not lacking. It would seem probable, therefore, that absorption is not essentially defective, for the pancreatic enzymes are concerned mainly with the preparation of food for absorption, but that the essence of this disturbance is one of retention and assimilation. Some of these atrophic infants, although secreting little gastric juice to act as a stimulus, secreted a very large amount of thin, watery juice, containing all the pancreatic ferments, although weak in lipase. This pathologic condition Hess has termed "paralytic hypersecretion or succorrhea." Cases of pylorospasm associated with gastric hypersecretion furnished numerous examples of pancreatic overactivity of a quite different nature. In these instances the gland probably was overstimulated by the normal agent, the gastric juice. Such cases may be termed "functional pancreatic hypersecretion," and later may develop into the paralytic type.

33. **Infantile Eczema and Indigestion.**—It is suggested by the authors that the acutely inflammatory form of eruption in infantile eczema presents so many features which are constant in occurrence and in form that its claim for consideration as a definite, fixed type of disease deserves further attention. For directly opposite reasons, the less intense inflammatory form of eruption cannot lay claim to such consideration. The stool findings show that the indigestion of fats and of carbohydrates are the only types which can be demonstrated to occur with any regularity and definiteness in association with infantile eczema. The occurrence of the acute exudate type of eczematous inflammation of the skin in such frequent association with an indigestion of fats and sugar indicates that the process in the skin and the process in the digestive tract probably have some etiologic relationship. Contrariwise, the fact noted at the outset that the majority of infants presenting the same symptoms of indigestion described above do not likewise present a cutaneous reaction points to the inevitable conclusion that some underlying condition, probably systemic, which the eczematous infants possess, is lacking in the non-eczematous individuals. Therefore, indigestion must occupy an intermediate position, if any, in the mechanism of the production of eczema.

34. **Intestinal Toxemia in New-Born.**—Morse's interpretation of the etiology of four of these cases is that a bacterial infection of the meconium, through either the mouth or anus, takes place within the first twenty-four or forty-eight hours after birth; that on account of the incomplete evacuation of the intestines the toxic products formed in the meconium as the result of this infection are absorbed into the circulation and that these toxic products cause the symptoms. Corroborative evidence in favor of this conception is that, as the meconium is made up of protein, the products of bacterial action in it must necessarily be putrefactive in character and, therefore toxic. It is a well known fact, moreover, that cyanosis may be enterogenous in origin. This symptom-complex is not merely a manifestation of septic infection, that is, of the entrance of bacteria into the circulation. The early onset of the symptoms, the absence of any nidus of infection and the absence of other signs of sepsis, such as hemorrhages, marked jaundice and boils, make it improb-

able, while the rapid and complete recovery after the evacuation of the bowels seems sufficient to exclude it. It is not simply a manifestation of starvation, analogous to the so-called "inanition fever" which occurs both in babies that have not been fed and in those that have been, and that the withdrawal of food in connection with the evacuation of the bowels relieves it. The treatment consists in the administration of one or two teaspoonfuls of castor oil, the withdrawal of food for from twelve to twenty-four hours and the feeding of water or water sweetened with saccharin. It is also well to irrigate the bowels in the beginning. Bromid or stimulants, such as strychnin or caffein, may be used, if necessary. The best food, after the period of starvation, is human milk, plain or diluted according to the individual baby's condition. Next to this, a mixture of cow's milk, low in fat, high in milk sugar and with a moderate amount of proteins, part of these preferably in the form of the whey proteins. It is important to give a high percentage of milk sugar in order to change the bacterial activity from the proteolytic to the fermentative type.

Ophthalmic Record, Chicago

September, XXI, No. 9, pp. 461-518

36 Supervised and Systematic Study of Ophthalmology. E. Jackson, Denver.
37 Tonometry, with Description of a Tonometer. H. S. Gradle, Chicago.
38 Hemianopsia of Luetic Origin with Partial Recovery. W. E. Bruner, Cleveland.
39 Phlyctenular (Eczematous) Conjunctivitis and Keratitis; Etiology and Value of Tuberculin as a Diagnostic Agent; Report of Forty Cases. A. E. Davis and H. Vaugan, New York.

Kentucky Medical Journal, Bowling Green

September 15, X, No. 18, pp. 719-750

40 Wearing Glasses. D. S. Reynolds, Louisville.
41 Suprapubic Prostatectomy. G. A. Hendon, Louisville.
42 Nephrolithotomy. H. H. Grant, Louisville.
43 Sarcoma Following Trauma. L. Frank, Louisville.
44 Bilateral Abductor Paralysis; Hysterical Aphonia; Report of Cases. C. T. Wolfe, Louisville.
45 Some Abnormal Obstetric Cases. T. K. VanZandt, Louisville.
46 Malignant Tumor in Abdomen of Child. P. F. Barbour, Louisville.
47 *Vaccine Treatment in Five Cases of Pyosalpinx. H. J. Farbach, Louisville.
48 Rheumatism Phylacogen. J. T. Dunn, Louisville.
49 Appendectomy Followed by Croupous Pneumonia; Recovery. O. H. Kelsall, Louisville.
50 Work of Mr. Robert Jones in Liverpool. J. D. Trawich, Louisville.
51 Iridodialysis. A. O. Pfingst, Louisville.

47. **Vaccine in Pyosalpinx.**—Evidence of pus in the tube, uterus or ovary is not in Farbach's opinion an imperative indication for the removal of these structures any more than it is for the removal of the analogous pathology in the male. Often the symptoms produced by the precipitated menopause are more distressing, and more dangerous, than those of the pyosalpinx. Farbach has seen cases illustrating every stage of these pathologic conditions and due to all sorts of infectious agents and, he says, has yet to see one that was not relieved or, at least, decidedly benefited by vaccine treatment. That contrary to certain opinions it is not only a temporary partial relief, but in his experience the results have been permanent and the relief complete. Autogenous vaccines, of course, promise more than stock vaccines, but in one of Farbach's cases a stock vaccine was used with equally good results.

Vermont Medical Monthly, Burlington

September 15, XVIII, No. 9, pp. 269-234

52 Operative Treatment of Recent Simple Fractures. J. B. Wheeler, Burlington.
53 Heredity, Criminality and Medical Inspection of Schools. C. F. Ball, Rutland.

Journal of Ophthalmology and Oto-Laryngology, Chicago

September, VI, No. 9, pp. 289-324

54 Refraction and Use of Cycloplegics, with Special Mention of Hyoscin. C. M. Harris, Johnstown, Pa.
55 Trifacial Reflexes, with Special Reference to Diseases of Eye, Ear, Nose and Throat. A. H. Andrews, Chicago.

New York State Journal of Medicine, New York

September, XII, No. 9, pp. 479-548

56 Surgery of Battlefield. G. H. Torney, U. S. Army.
57 Wounds of Naval Warfare. C. F. Stokes, U. S. Navy.
58 Surgery of Bile Ducts. J. B. Deaver, Philadelphia.
59 Biliary Colic Without Gall-Stones. I. S. Haynes, New York.
60 Operation for Pott's Disease of Spine. R. A. Hibbs, New York.
61 *Surgical Treatment of Irreducible Dislocations of Shoulder and Elbow Joints. L. W. Hotchkiss, New York.
62 Treatment of Simple Fractures by Closed Method. J. M. Hitzrot, New York.
63 Symptomatology of Hyperthyroidism. G. Dock, St. Louis.
64 Atypical Forms of Hyperthyroidia. A. Lambert, New York.
65 Medical Treatment of Exophthalmic Goiter. S. P. Beebe, New York.
66 Surgical Treatment of Hyperthyroidism. M. B. Tinker, Ithaca, N. Y.
67 *Intratracheal Insufflation Anesthesia; Its Value in Thoracic and General Surgery. C. A. Elsberg, New York.
68 Chance and the Prepared Mind. R. M. Pearce, Philadelphia.
69 Syphilis of Stomach. J. Meyers, Albany, N. Y.
70 Radiographs of Argyrol or Collargol Injected Urinary Tract. H. D. Furniss, New York.

61. **Dislocations of Shoulder- and Elbow-Joints.**—Hotchkiss' records of arthrotomy for old irreducible dislocations of the shoulder and elbow include fifteen cases, of which eight were of the shoulder and seven of the elbow. In these fifteen operated cases there was no mortality. The ages of the patients varied between 7 and 60, and in all save one, in which the record is incomplete, the functional results were good. Hotchkiss says that one must always expect, perhaps, some stiffness following an arthrotomy at the shoulder with division of extensive adhesions and replacement of the bone to its normal position. This is generally more than compensated for, however, by the movable scapula; while the restoration of the rotundity of the shoulder and the absolute relief of pain, in cases in which these were marked features, gave much satisfaction and relief to the patient. As a rule the diagnosis is easy in the old shoulder dislocations and may often be made by inspection alone, so characteristic is the deformity in some cases. A Roentgen-ray plate, however, clears up many unsuspected conditions, and is most useful both as a guide and as a record. In the old backward dislocations of the elbow, on the other hand, the differential diagnosis between it and fracture of the condyle is by no means always clear and here the Roentgen-ray is especially valuable and necessary.

67. **Intratracheal Anesthesia.**—Elsberg calls attention especially to the value of insufflation of pure air or of air and oxygen as a method of artificial respiration. Whenever there is need for prolonged artificial respiration such as in opium poisoning, drowning, etc., the method will be very useful. In several instances he has kept patients alive and in good condition for three, four, six or seven hours, although during that time they never made a single respiratory movement. The color of the patients remained pink and their blood was well aerated. It is a valuable characteristic of this method that the patients need not breathe in order to have oxygenation of their blood occur, the apparatus does the breathing for them. In this respect, the method differs from all other apparatus for this purpose, and it has this advantage over both the positive and negative pressure methods for thoracic surgery. In the latter the respiratory movements of the patients are absolutely necessary; without them aeration of the blood cannot occur, but oxygenation of the blood will occur just as well whether the patient makes respiratory movements or not with intratracheal insufflation. The patient makes the movements, but thereby does not get any air into the lungs; the apparatus attends to that.

Journal of Medical Society of New Jersey, Orange

October, IX, No. 5, pp. 221-274

71 Relation of Municipality to Child Life. A. F. McBride, Paterson.
72 Educational Hygiene and Prophylaxis. G. J. Holmes, Newark.
73 Object and Intent of Medical Inspection of School Children. J. MacDonald, East Orange.
74 Present-Day Feeding Principles. F. H. Glazebrook, Morristown.
75 Blood-Pressure in Pregnancy. F. R. Haussling, Newark.

Cleveland Medical Journal

September, XI, No. 9, pp. 631-692

76 *Histologic Changes in Certain Organs in Patient Dying After Salvarsan. H. O. Ruh, Cleveland.
77 Hypertonic Contraction or Intermittent Closing of Cerebral Arteries. J. Phillips, Cleveland.
78 Care of New-Born Infant; Progress in Pediatrics. H. Hempstead, Cleveland.
79 Anterior Poliomyelitis. E. F. Freedman, Cleveland.
80 Visceral Pathology of Syphilis. O. T. Schultz, Cleveland.

76. **Changes Due to Salvarsan.**—In a case having a positive Wassermann reaction and clinical signs of lues, after the intravenous injection of 0.5 gram of salvarsan in alkaline solution there followed an anuria which resulted in death after five days. At autopsy Ruh found evidences of a severe intoxi-

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cation. The main effects are seen in the kidney and liver, which show degenerative changes and proliferation of the parenchymatous elements. The pathologic changes in the liver and kidney are similar to those produced in experimental arsenic poisoning.

Journal of Maine Medical Association, Portland

October, III, No. 3, pp. 975-1010

81 Prevention of Insanity. F. L. Hills, Bangor.
82 Need of Correcting Flat Feet. M. S. Young, Oak Bay, N. B.
83 Reminiscences. E. Small, Belfast.

Wisconsin Medical Journal, Milwaukee

September, XI, No. 4, pp. 103-136

84 *Experimental Study of Some Effects of Certain Anesthetics. J. L. Yates, Milwaukee.
85 Diagnosis and Treatment of Foreign Bodies in Eye and Orbit. G. I. Hogue, Milwaukee.
86 Roentgen Localization of Foreign Bodies in Eye and Orbit. E. S. Blaine, Milwaukee.

84. **Effects of Anesthetics.**—The drugs (chloroform, ether, nitrous oxid oxygen and cobra venom) used by Yates in his experiments were found capable of instituting degeneration changes in the parenchyma of the heart, liver and kidney, or of aggravating such changes when already established. These metamorphoses were found to bear a serial relationship of increasing severity from which recovery is not always possible. Anesthetics are regarded by Yates as toxic in their effects, and should, he says, be administered with due regard to their most dangerous action as affected by individual conditions. Ideal general anesthesia, pleasant and safe, seems to be impossible until a drug is found which will have a purely selective and benign action on the sensorium. The nearest approach thereto may be the development of methods requiring the minimum of the least injurious drugs (probably the most transitory in action), which will least impair, or possibly enhance, the efficiency of cardiovascular, respiratory or defensive mechanisms.

Discouragingly discordant opinions, based on personal experience and clinical observations, and therefore frequently biased, Yates believes, justify the statement that there is no one method of anesthesia, single, combined or sequential, which is so safe as to warrant its invariable application; on the other hand, chloroform may be said to possess no redeeming feature. The observations made by Yates in his series of experiments on unfavorable animals under untoward conditions are in such accord with clinical evidence as to give hope that the experiments now under way, designed to determine the degree of persistence of the lesion caused by drugs and their effects on resistance to infection, may permit of valuable deductions.

Journal of Outdoor Life, New York

October, IX, No. 10, pp. 225-254

87 After-Care and After-Cure of Tuberculosis Patients. C. D. Parfitt, Gravenhurst, Ont.
88 Social Activities of Bellevue Tuberculosis Clinic. S. E. Shaw, New York.
89 Meaning of Rest. W. M. Ross, Stevens Point, Wis.
90 Examination of Employees for Tuberculosis. T. B. Sachs, Chicago.
91 Tuberculosis Carriers. G. B. Webb, Colorado Springs, Colo.
92 Sanatorium for Indian Children. J. N. Alley, Fort Lapwai, Idaho.

Archives of Pediatrics, New York

September, XXIX, No. 9, pp. 641-720

93 *Dextrins and Maltose in Infant-Feeding. T. S. Southworth, New York.
94 *Employment of Salvarsan in Infants and Young Children. L. E. La Fétra, New York.
95 Infantile Scurvy and Modern Conditions. W. P. Northrup, New York.
96 *Influence of Food on Intestinal Flora of Infants. A. Friedlander and J. V. Greenbaum, Cincinnati.
97 Retroperitoneal Lymphosarcoma Treated with Coley's Fluid. H. K. Hill, Philadelphia.
98 Chronic Colitis in Child Three Years of Age with Deformity of Sigmoid. J. F. Bell, Englewood, N. J., and L. T. Le Wald, New York.

93. Abstracted in THE JOURNAL, July 13, p. 139.

94. **Salvarsan in Infants and Children.**—While the indirect method of giving salvarsan to the nursing mother is regarded by La Fétra as being valuable and should be used when the mother is available, the surest method in his opinion consists in giving the salvarsan to the infant. Both indirect and direct administration should be employed whenever possible. The intravenous route of administration is the best. Usually it will be found easiest to expose the vein before attempting to insert the needle. The dosage should be not less than 0.01 gram per kilogram of body weight. Repeated injections and supplemental treatment by mercurials may be necessary. The Wassermann reaction should be followed for a year.

96. **Intestinal Flora of Infants.**—The foods used by Friedlander and Greenebaum, albuminized milk and simple modified milk (fat, 2 per cent.; sugar, 7 per cent.; proteid, 3 per cent.) had very little influence on the biologic reactions of the fecal flora as a whole. There was, however, a slight lessening of the putrefactive reactions on the 2-7-3 modification. The acidophilic flora remained about constant on both foods. Finkelstein's food depends on its lactic acid content. The lactic acid bacillus flora formed during its administration was continued when the food was changed to 2-7-3, because in the latter instance the lactic acid was formed from the sugar. In other words, with both foods lactic acid therapy was given, so that it is not surprising that the bacteriologic reactions were similar in both instances.

In striking contrast to the slight changes in the intestinal flora there was a remarkable change in the clinical aspect of two cases studied. The general condition improved greatly, as did the gross character of the stools. On the Finkelstein food there was moderate but steady gain in weight, while on the 2-7-3 modification there was very marked and rapid gain in weight. The Finkelstein food was undoubtedly of marked value in both these cases. After its administration the gas bacillus disappeared in each case. Again the low sugar content of the food undoubtedly rested the gastro-intestinal tract, so that after four weeks of its use an increase of sugar *ad maximum* (7 per cent. lactose) was not only tolerated, but was utilized with great benefit to the child. Finkelstein's food is undoubtedly of great value for short periods in suitable cases, for its effect on the intestinal flora (substitution of acidophilic for putrefactive organisms) and also because of its power to rest the gastro-intestinal tract by its low sugar content, especially for cases previously overloaded with sugars.

Medical Record, New York

October 5, LXXXII, No. 14, pp. 599-644

99 Syphilis of Heart and Blood-Vessels. G. Richter, St. Louis.
100 Chlorosis and Tuberculosis. C. M. Montgomery, Philadelphia.
101 Psychogenetic Convulsions and Genuine Epilepsy. L. P. Clark, New York.
102 Some Reasons Why General Practitioner Does Not More Frequently Recognize Pulmonary Tuberculosis in Its Incipiency. G. W. Beach, Oakdale, Minn.
103 Criticism of Orthodox Interpretations of Occupational Cramp-Neurosis and Term Neurosis. T. A. Williams, Washington, D. C.
104 *Experimental Studies of Action of Electrical Cauterization on Neoplasms. J. B. Squier, New York.
105 Tics and Their Treatment; Education vs. Hypnosis. J. H. Leiner, New York.
106 Method of Anoci-Association for Abdominal Operations in Selected Cases, with Nerve-Block *à Distance*. L. F. Watson, Oklahoma City, Okla.

104. **Action of Electrical Cauterization on Neoplasms.**—The studies which form the basis of Squier's communication have to deal with the action of the Oudin or monopolar, and the d'Arsonval or bipolar current upon malignant growths of the bladder and otherwise. The work was undertaken in consequence of an unusual experience, where the use of the d'Arsonval current caused the disappearance of an extensive vesical carcinoma in a man, 50 years of age. This method of treatment has been employed in five other instances; a large papilloma was removed by suprapubic incision and the base sparked; two cases of prostatic carcinoma, in which the cavities made by removal of the prostates have been cauterized by sparking; two cases of vesical carcinoma have been sparked through suprapubic incision, without any attempt at excision. In all these cases Squier was impressed by the absence of any amount of bleeding after operation, and by the comparatively small shock shown by the patients, even though they have been subjected to a very considerable period of anesthesia.

Experiments have been carried out on tumor-bearing, large white rats. The sarcomatous tumors were thoroughly fulgurated with bipolar electrodes, the distance between the poles being the diameter of the tumor. In two cases the current

burned a hole in the skin and the tumor was loosened from the surrounding tissue and fell out. All of this series of five animals died in from one to seven days. In all, remnants of neoplasm could be found at the original site of the tumor. Death was not due to extension of the tumor; the lesion found was an acute enterocolitis resembling that found after severe and extensive burns. Similar results were obtained with carcinoma experiments. While the use of the current seems to be valuable in checking hemorrhage, as in bladder operations, it can by no means be assumed to replace extensive resection in the cure of carcinoma. Its action is probably simply that of an easily handled cautery.

New York Medical Journal

October 5, XCVI, No. 14, pp. 669-720

107 *Skin Diseases in Relation to Sexual Organs. S. Pollitzer, New York.
108 Sarcoma of Mediastinum. H. B. Allyn, Philadelphia.
109 Phylacogen in Secondary Infections in Pulmonary Tuberculosis. I. H. Alexander, Pittsburgh.
110 Therapeutic Nihilism. M. Schulman, New York.
111 Empirical Treatment of Alcohol and Drug Neuroses. T. D. Crothers, Hartford, Conn.
112 Sanitary Control of Prostitution in Some European Cities. F. Bierhoff, New York.
113 Importance of Early Training of Mothers in Care of Infants. S. A. Agatston, New York.
114 Tetany Following Thyroidectomy. W. Lathrop, Hazleton, Pa.
115 Reimplantation of Patient's Cartilage After Submucous Resection of Septum for Correction of Obstructive Lesions. S. Goldstein, New York.

107. **Skin Diseases and Sexual Organs.**—The connection between certain dermatoses and disorders in the genital sphere in women lacks direct experimental foundation, but, Pollitzer says, the clinical evidence that such a connection exists is so strong and so direct that there can be no reasonable place for doubt. It is, for instance, an established fact that certain dermatoses occur during pregnancy, disappear at its termination, and occur with succeeding pregnancies. One must explain these dermatoses as due to the presence of some chemical products in the blood that act like certain drugs in some individuals in producing eruptions.

In men the dermatoses connected with the genital organs are of less importance and of less frequent occurrence than in women, for the simple reason that the genital glands in the male are of minor physiologic importance compared to those of the female, and are less subject to disease. The internal secretion from the testicles has a certain bearing on the physiology of the skin, but this seems to be limited to the period of puberty, and thereafter the male glands are not subject to the great physiologic fluctuations in functional activity that affect the female through menstruation and pregnancy.

Pollitzer discusses the more important effects on the skin that may with reasonable certainty be regarded as depending on the functional activity of these organs, such as the dermatosis of puberty, of menstruation, of pregnancy and of the climacterium.

Boston Medical and Surgical Journal

October 3, CLXVII, No. 14, pp. 455-494

116 Problem of Race Betterment. J. E. Mears, Philadelphia.
117 Coccyodynia. C. G. Cumston, Boston.
118 Results of Complement-Fixation Test for Gonorrhea at Massachusetts General Hospital. R. F. O'Neil, Boston.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London

September 21, II, No. 2699, pp. 669-752

1 *Modern Problems Relating to Antiquity of Man. A. Keith.
2 Chief Use of Peritoneum. J. Howell.
3 Tuberculosis in Infancy and Childhood. C. McNeil.
4 Subjective Method for Estimating Blood-Pressure. H. G. Armstrong.
5 *Whooping-Cough Treated by Intravenous Injections of Iodoform. T. W. Dewar.
6 *Contagiousness of Leprosy. J. W. Lindsay.
7 Strangulated Inguinal Hernia in Infant. G. E. E. Nicholls.
8 Treatment of Non-Valvular Cardiac Disease. G. A. Gibson and A. R. Cushny.
9 *Standardization of Cardiac Tonics. A. J. Clark.
10 *Some Investigations of Action of Digitalis on Blood-Pressure in Man. F. W. Price.
11 Clinical Experiences with Tetrahydropapaverolin Hydrochlorid. C. R. Marshall.
12 West Indian Cane Sugar in Treatment of Certain Forms of Heart Disease. A. Goulston.
13 Rôle of Calcium Salts as Therapeutic Agents. J. Barr.
14 Cod-Liver Oil and Its Action in Phthisis. O. T. Williams.
15 Action of Symphytum Officinale. C. J. Macalister.
16 Varieties and Significance of B. Coli in Water-Supplies. A. C. Houston, W. G. Savage and W. Wright.

1. Also published in *The Lancet*, September 21.

5. **Treatment of Whooping-Cough.**—In ten days Dewar stopped the cough in a case of whooping-cough by intravenous injections of iodoform.

6. **Contagiousness of Leprosy.**—Lindsay is absolutely convinced that in South America, at any rate, leprosy is spread by contagion, either immediate through contact with a leper or his discharges, or mediate through conveyance of the infection by insects. Owing to the conditions being so favorable to the rapid spread of leprosy, the disease is far more infectious than is tuberculous disease of the lungs, for which the conditions are not so favorable. It has nothing at all to do with fish-eating, as the people of South America do not eat fish, and although they are all Roman Catholics, the only Friday when they do not eat meat is Good Friday.

9. **Standardization of Cardiac Tonics.**—According to Clark strophanthin never produced rigor in the isolated frog's sartorius; in strong concentration it produces a gradual loss of the power of contraction. Digitonin produces rigor in the isolated frog's sartorius, but has only a feeble action on the frog's heart; the effect produced is unlike that produced by the digitalis glucosides. The action of preparations of digitalis in producing rigor of the isolated frog's sartorius, Clark says, is probably due entirely to the digitonin or other saponins present, and is not due to the glucosides. There is no necessary relation between the action of preparations of digitalis and allied substances on the striped muscle of the frog and their action on the frog's heart.

10. **Action of Digitalis on Blood-Pressure.**—Taking twenty-one cases in which thoroughly accurate observations were made by Price, in only one case was there a rise in blood-pressure. In several cases there was a fall of pressure, and not infrequently a normal diurnal variation of considerable range occurred. So far as these cases are concerned, judged by the methods in use for observing the blood-pressure clinically, the internal administration of digitalis, Price says, does not raise the blood-pressure in man by constricting the peripheral vessels. If that be so, the very important practical point will have been discovered that there is no risk in administering the drug in cases of degeneration of the walls of the blood-vessels or of supernormal blood-pressure.

Journal of Tropical Medicine and Hygiene, London

September 16, XV, No. 18, pp. 273-288

17 House-Fly as Carrier of Typhoid Infection. F. W. Thomson.
18 Treatment of Twenty-Two Cases of Yaws by Salvarsan Injections. R. P. Cockin.
19 Inoculation, Vaccination and Small-Pox. R. H. Castor.

Lancet, London

September 21, II, No. 4647, pp. 807-864

20 Modern Problems Relating to Antiquity of Man. A. Keith.
21 Vertebral Ankylosis: Various Clinical Forms. J. Dardel.
22 *Nature of Pancreatic Diabetes. F. P. Knowlton and E. H. Starling.
23 *Unusual Contents in Hernial Sacs. A. E. Barker.
24 Case of Retrogressive Tuberculous Meningitis. W. T. Brooks and A. G. Gibson.
25 Relationship Between Movable Kidney and Chronic Colitis. J. Liddell.
26 Perforating Appendicitis of Bilharzial Origin. H. T. Mursell.
27 *Intravenous Injection of Paraldehyd. H. L. C. Noel and H. S. Souttar.
28 Technic of More Extensive Abdominal Operations for Cancer of Uterus. F. J. McCann.
29 Jousset's Method of Demonstrating the B. Tuberculosis in Pleural Fluids. S. R. Gloyne.
30 Chronic Intestinal Stasis; Case of Trigeminal Neuralgia Treated by Ileocolostomy. G. T. Mullally.
31 Intraperitoneal Injections of Oxygen During Abdominal Operations. H. J. Godwin.

22. **Nature of Pancreatic Diabetes.**—So far, the authors' experiments seem to indicate that the pancreas normally produces a hormone which circulates in the blood, and the presence of which is necessary in order that the tissue cells may be able to assimilate and utilize the sugar of the blood. Absence of this hormone leads to glycosuria.

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23. **Unusual Contents in Hernial Sacs.**—In one of his cases Barker found a long vermiform appendix firmly adherent by recent adhesions to the inner aspect of the femoral ring. The apex was almost destroyed. It was removed in the usual way and the wound healed by first intention. In a second case, a right-sided hernia became large, painful and irreducible. The patient was sick only once at the outset. The bowels had been regular until the last day. On admission the whole right inguinal region was swollen, edematous, painful and very tender to the touch; its upper half was tympanitic, the lower dull. The diagnosis was uncertain, but the treatment to be adopted was obvious. Under a local anesthetic the tumor was incised from end to end, and a very large quantity of pus and sloughy tissue found lying on the external oblique muscle. But a great quantity of pus came also through the external ring, into which the finger could be passed. It was clear that the main abscess was intra-abdominal and lay in the neighborhood of the appendix.

A third patient had a large left hernia which was a recurrence after an operation two and a half years before. It was as large as an adult fist; the contents were very hard and of irregular outline, and absolutely irreducible. There was no impulse on coughing and no gurgling. On opening the sac, which was not tense and contained some fluid, the whole uterus, both broad ligaments, fallopian tubes and ovaries appeared to be the only contents. Nothing abnormal was noticed about them. They were absolutely irreducible and required free incision of a good deal of the cicatricial tissue of the old operation before they could be pushed back into the abdomen. When operated on two and a half years before for the radical cure of hernia on the same side the contents were found to be small intestine without any omentum, and the uterus and adnexa were not seen. The patient was a corpulent woman with a more or less pendulous abdomen.

The fourth patient had a large right inguinal hernia, which had appeared under the scar of a radical operation done fourteen years before. The present swelling had been present for many years, but had been reducible with more or less difficulty until the morning of admission. Then during a strain the hernia had suddenly increased in size, with pain, and since that moment had not yielded to pressure. Another point of which the patient complained was that since the increase of the hernia in the morning he had been unable to pass any urine. He further stated that for a long time back (three or four years) he had been unable to pass urine until he had partly reduced the hernia. But since the morning when it had suddenly enlarged (he had been sick, though the bowels were open) and become irreducible, he could not micturate with every desire to do so. The inguinal swelling was as large as a coconut, extending from the external ring into the scrotum; it was dull on percussion and elastic, and no effect was produced by taxis. Under the perfect relaxation of spinal analgesia taxis was successful as far as a hard mass of omentum was concerned, but the bulk of the tumor was still irreducible. An incision was made in the usual direction through the old scar of the operation of many years before. The cord was found lying in front of the narrow neck of the tumor. The mass was separated from the surrounding tissues and lifted up. It could be then traced with the fingers down to the prostate, at which it could be distinctly felt to terminate. The white fat and veins of the cavum Retzii behind the pubis could be distinctly recognized, and materially helped the diagnosis. The peritoneum was not seen, and, of course, the hernia had no sac. The urinary bladder was herniated.

27. **Intravenous Injection of Paraldehyd.**—The authors consider the intravenous use of paraldehyd to be practically safe, and have ventured to use it as a hypnotic in cases of grave cardiac and pulmonary disease with perfect success. They do not suggest that it can replace the slower but more lasting hypnotics, but draw attention to it as a method by which under the most trying circumstances they have never failed to induce within sixty seconds a condition closely resembling normal sleep. They mix 5 to 15 c.c. of paraldehyd with an equal amount of ether and dissolve the mixture in 150 c.c. of a cold 1 per cent. solution of sodium chlorid in sterile distilled water free from dead bacteria, or in default of this in ordinary boiled tap water. The solution should be perfectly clear after shaking. It is placed in a sterile bottle with a rubber stopper through which pass two glass tubes To one of these tubes bellows are attached. The other reaches to the bottom of the liquid and leads off by a long rubber tube to a fine hypodermic needle. The solution may be injected cold or at a temperature not exceeding 25 C.

The patient's arm being surrounded with a light tourniquet bandage, a prominent vein is selected, the skin is cleansed with ether, and the needle is inserted. The tourniquet is removed, the bellows are worked, and the fluid is steadily driven into the vein at the rate of from 30 to 60 c.c. per minute. Small operations, such as removing teeth or suturing wounds, may be performed. The drug is, however, excreted by the lungs with great rapidity, and for a lasting effect the whole 15 c.c. of paraldehyd will usually be required.

Bristol Medico-Chirurgical Journal

September, XXX, No. 117, pp. 193-288

32 Tuberculosis. R. Roxburgh.
33 Insanity; Its Classification and Nomenclature. F. S. Bullen.
34 Right and Wrong Side of Roentgenogram; Has a Mistake Been Made? W. Cotton.
35 Relationship Between Toxicity and Chemical Reactivity in Certain Benzene Derivatives. O. C. M. Davis.
36 Raynaud's Disease. D. A. Alexander.

Indian Medical Gazette, Calcutta

September, XLVII, No. 9, pp. 341-380

37 Recent Facts as to Inoculation and Prevalence of Enteric and Paratyphoid Fevers in European Army of India. R. H Firth.
38 Details of Vision of 132 Cases of Intracapsular Extraction of Cataract. H. Smith.
39 Cholera Season; Some Observations, Methods and Results T. H. Bishop.
40 *Treatment of Uterine Prolapse with Special Reference to Inglis Parson's Method of Injection of Quinin Sulphate Into Broad Ligaments. J. Davidson.
41 *Treatment of Small-Pox by Tincture of Iodin. A. G. Newell.
42 Outbreak of Urticaria Epidemica Due to Mucuna Pruriens Cow-Itch Plant. H. Stott.
43 Opium Cures, "Combretum Sundaicum" and "Antipav." W. C Brookes.
44 Design for Out-Patients' Department of Hospital in India M. H. Thornely.

40. **Treatment of Uterine Prolapse.**—In 1910 Inglis Parsons suggested a new method of treatment of prolapse in old women where the pessary was not suitable, and who were patients not likely to stand prolonged operative procedure It consisted in the injection of quinin sulphate. Twenty-four grains of quinin sulphate are dissolved in 1 dram of distilled water and 1 dram of dilute sulphuric acid. This makes a 1 in 5 solution, which is boiled in a test-tube, and a plug of sterile cotton-wool inserted till the solution is required. One dram of the solution is injected into each broad ligament i. e., equivalent to 12 grains of quinin sulphate on each side

The patient is prepared as for any gynecologic operation under an anesthetic, and the vagina carefully douched. An anesthetic is given. The patient is placed in the lithotomy position. Retractors are inserted to keep back the vaginal walls, and a sound passed into the uterus and held horizontally. In this position the broad ligaments form two triangular spaces with the bases toward the operator. Crossing this space from the outer to the inner side are the uterine arteries and veins and the ureters. If the cervix is normal in size, the puncture is made about three-fourths of an inch from its edge. The needle is directed a little downward and outward. In this position the uterine arteries and veins are on the inner side, while the ureter is above and somewhat inside. The needle point should feel quite free when it is in the cellular tissue. The solution is slowly injected and spread out from side to side. After both injections have been made, the uterus is anteverted by bimanual manipulation, and a cup and stem vaginal pessary introduced, and kept in position by tapes. The pessary is removed on the fourth day. The patient is kept lying in bed for at least ten days, preferably for three weeks. A ring pessary may be worn for some months until the full strength of the new fibrous tissue is acquired. Davidson cites fourteen patients so treated. Six have been seen after the operation. One showed a relapse, the other five showed successful results.

41. **Tincture of Iodin in Small-Pox.**—Newell uses iodin in small-pox on the forehead, chin, neck and the back of the hands. Using it early in confluent cases he found that it materially affected the development of the pocks and prevented the "pitting" which is so horrible a result in confluent cases. Newell uses the ordinary B. P. tincture of iodin and so far has limited its use to the above-mentioned parts. The application can be applied two or three times a day for a few days only and then totally discarded. The colored scabs and epithelium all come away and, in patients treated early, leave no trace of a scar even in severe confluent cases.

Dublin Journal of Medical Science

September, III, No. 489, pp. 161-240

45 Phantasms of Life. W. G. Smith.

Annales de Gynécologie et d'Obstétrique, Paris

September, XXXIX, No. 9, pp. 513-575

46 *Surgical Treatment of Placental Hemorrhage. (Traitement chirurgical des hémorragies par décollement du placenta. normalement et vicieusement inséré.) Couvelaire.

47 Sarcoma of Uterine Cervix. (Sarcome diffus du col de l'utérus.) A. Herrenschmidt and P. Mocquot.

46. **Surgical Treatment of Placental Hemorrhage.**—Couvelaire's article was one of the addresses at the recent international gynecologic congress, and it was summarized in the Berlin Letter in THE JOURNAL, Oct. 5, p. 1305.

Archives Générales de Chirurgie, Paris

August, VI, No. 8, pp. 877-1004

48 Spontaneous Coxa Vara Simulating Fracture or Separation of the Epiphysis. M. Savariaud.

49 Fracture of the Base of the Skull. (Mécanisme et classification des fractures de la base du crâne irradiées à plusieurs étages.) J. Poulain.

50 Sterilization of the Hands. (Etude comparative des Méthodes anciennes et nouvelles dans la désinfection des mains.) E. Marquis.

51 Subcutaneous Lipoma of the Mamma: Thirty-Seventh Case on Record. (Les lipomes du sein.) G. Zesas.

Archives Internationales de Chirurgie, Ghent

V, No. 3, pp. 247-338. Last indexed Oct. 7, 1911, p. 1244

52 *Advantages of Early Splenectomy in Banti's Disease; Nine Cases. (Su di alcune case di morbo di Banti.) G. Urbino.

53 Trauma as Factor in Neoplasms. L. La Roy.

Nos. 4-5, pp. 341-514

54 Cystic Disease of the Mamma. (Les tumeurs kystiques du sein.) L. La Roy.

55 *Influence of Exploratory Laparotomy on Inoperable Cancer. S. Spangaro.

52. **Splenectomy in Banti's Disease.**—Five of Urbino's nine patients were permanently cured by removal of the enlarged spleen which evidently had been flooding the organism with toxic products. The age ranged from 13 to 44 years; there was nothing to suggest syphilis in any case. Three of the patients had had typhoid, and alcoholism was suspected in one in this group, as also in another man. Six of the patients were women. The first symptoms had been loss of appetite, digestive disturbances and diarrhea, sometimes bloody. Depression and debility followed with edema and anemia. The affection continued an insidious progressive course until finally local discomfort led to discovery of the enlarged spleen. Headache, epistaxis and pain in the liver were noticed in some of the cases. From one to four years had elapsed before the spleen was removed, and none of those in an advanced stage was cured, so that Urbino warns that grave lesions on the part of the liver, a tendency to hemorrhage and ascites, should be regarded as contra-indicating splenectomy. Death followed within a week in three cases in this stage; another patient lived eighteen months. The necropsy findings in one case are reviewed. After the splenectomy there is liable to be severe gastro-intestinal hemorrhage which should be vigorously combated with hot irrigation of the intestines, vasoconstrictor drugs and saline infusion. He warns further that the resisting power to infections seem to be materially reduced a few days after splenectomy, the patients displaying a special susceptibility and the infections running an unusually severe course.

55. **Exploratory Laparotomy with Gastro-Intestinal Cancer.**—Spangaro relates that an unmistakably favorable influence was apparent in five out of his sixteen cases of gastric cancer in which the exploratory laparotomy showed that the growth was inoperable. Conditions took a decided turn for the better after the exploratory laparotomy, and he advises it as a routine palliative measure even when certain of the inoperability of the growth. A number of factors cooperate in determining the influence of the laparotomy, whether for better or worse; gastric cancers seem to be especially favored in this respect.

Archives Mensuelles d'Obstétrique et de Gynécologie, Paris

September, I, No. 9, pp. 97-144

56 *Hysterectomy in Treatment of Cancer of Uterine Cervix in the Course of Pregnancy, Delivery or Post Partum. Levant.

57 Gynecologic and Obstetric Customs Among the Natives of French Guinea. Joyeux.

56. **Cancer of the Cervix During Pregnancy and the Puerperium.**—Levant presents arguments to prove the undesirability of the vaginal route for removal of cancer of the cervix in a pregnant or parturient woman. The mortality for the woman is about the same as with abdominal hysterectomy, but for the child it is far higher, while the dangers from an incomplete operation are greater. The Wertheim technic for abdominal panhysterectomy offers much better chances for both mother and child. He has been unable to find any record since 1907 of a vaginal hysterectomy for cancer of the cervix of the pregnant uterus. In six cases a combined vaginal and abdominal technic was applied, but this, he comments, is unnecessary as the vagina can be so readily drawn up from above.

Grèce Médicale, Syra, Greece

August 15, XIV, Nos. 15-16, pp. 29-32

58 Cyclops Monster and Child with Hernia of the Brain. (2 cas de monstruosités foetales—opocéphale-otocéphale avec exencéphale.) M. N. Cairis. Commenced in No. 13.

Journal de Médecine de Bordeaux

August 11, XLII, No. 32, pp. 501-516

59 *Papillary Tumors in the Genital Region. (Traitement des végétations génitales.) W. Dubreuilh.

60 Manganese in the Organism. (A propos du manganèse normal.) P. Carles.

August 18, No. 33, pp. 517-536

61 *Cesarean Section for Puerperal Hemorrhage. (A propos de l'accouchement chirurgical appliqué au traitement des hémorragies de la puerpéralité.) G. Fieux.

August 25, No. 34, pp. 533-548

62 Cholesterin in the Blood and Other Organic Fluids. P. Mauriac.

59. **Genital Vegetations.**—Dubreuilh advises systematic application of antiseptics and astringents to prepare the field for operative treatment. In some cases this alone suffices, the growths shriveling and disappearing. Such vegetations are liable to subside spontaneously after a pregnancy; if they become aggravated during a pregnancy they are liable to return soon, even after excision. Roentgenotherapy is formally contra-indicated during a pregnancy on account of danger to the fetus, as the perineum is not a sufficient protection. Excision is better than curetting, as the latter is seldom complete and the skin is particularly tender in these regions.

61. **Operative Treatment of Puerperal Hemorrhage.**—Fieux relates two cases in which conditions seemed to call for cesarean section, but he was able to avoid it. The patient had a contracted rachitic pelvis and symphyseotomy was done. This not only permitted natural delivery of the viable child, but it made her deliveries later natural childbirths; she had previously had five infants still-born or requiring embryotomy. In the second case the hemorrhage from placenta prævia was so fulminating that there was no time for an operation. It was arrested by the inflatable bag, but this was evidently responsible for the death of the fetus. Fieux has never had occasion to dread post-partum hemorrhage with placenta prævia. With retroplacental hemorrhage conditions are different; the extravasation of blood in the walls renders them incapable of contracting. Women who have retroplacental hemorrhage are generally multiparæ and albuminuric, so that hysterectomy is less serious for them than for women with placenta prævia as a rule. Placenta prævia is a transient condition and cesarean section is rarely required for it. Cesarean section can be done first for placental hemorrhage and if

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the uterus is found ecchymotic it can be removed. Under all circumstances, he reiterates, the aim should be to avoid mutilating operations as much as possible.

Journal d'Urologie Médicale et Chirurgicale, Paris

August, II, No. 2, pp. 157-320

63 *The Liver as Factor in Hematuric Nephritis. (Rôle du foie dans la production des hématuries au cours des néphrites dites hématuriques.) G. Roque and J. Chalier.
64 *Action of Urea on the Kidney Secretion in Cases of Oliguria. G. Picot.
65 *Diagnostic Induced Diuresis. (Recherches sur l'épreuve de la diurèse provoquée: polyurie expérimentale.) P. Merklen.
66 Rebellious Diplococcus Bacteriuria Cured by Auto-Vaccine. Aurelle and R. Badet.
67 Urethroscopy. G. Luys and G. Le Virghl.

63. **The Liver with Hematuria.**—Roque and Chalier report the case of a man of 58 with a history of malaria and liquor drinking whose urine suddenly became bloody and no cause for the total hematuria could be discovered. By the end of two months, when the patient was first seen, there was considerable edema in the legs, with weakness, and the liver was found much enlarged and tender with signs of incipient chronic disease of the kidneys. Under the usual measures the kidney subsided in size and with this the hematuria disappeared, although blood could still be detected by the finer tests. Roque and Chalier insist that this case is a suggestive example showing the influence of the liver on the development of hematuria in a latent chronic nephritis. The case emphasizes anew that the liver must be regarded as an important factor in hematuria and that nephrectomy alone is consequently illogical as a method of treating hematuria in many cases. Nephrotomy or decapsulation may be indicated, but before this is resorted to, rest in bed, dieting and other measures to act on the liver should be given a thorough trial, striving to reduce the congestion in the liver. For this cauterization with a conical cautery may prove useful (*pointes de feu*) with calomel, sodium salicylates and possibly drugs to act on the coagulation of the blood.

64. **Urea in Treatment of Oliguria.**—Picot reports three cases in which the extremely deficient secretion of urine was restored to normal proportions by administration of urea. The diuretic action of urea seems to depend on the dose. He gave 25 gm. of urea in a glass of milk slowly sipped. This dose induced pronounced diuresis. He gave it to one patient with much uremia as a prophylactic measure before an operation on the kidney. In another case there had been anuria for seven days but it was conquered by the urea. All of the patients presented signs of uremia; it was calculated that one had 4.10 gm. of urea in the blood, another 0.7, and yet none was harmed by the intake of more urea and all showed marked benefit from the diuresis induced. The dose was repeated the second day in the last case. As a preliminary to an operation, this urea treatment seems promising to him.

65. **Test Polyuria.**—Merklen gave 600 gm. of water in the morning, fasting, to a number of sick and well persons, and tabulates the findings in regard to the intervals and amounts of urine voided during the following two hours and a half. The test was applied also in a few cases after theobromin had been taken. Among the points thus learned is that when there is a wide divergence between the findings when the individual stays in bed or is up and about, this suggests some extrarenal, possible cardiac cause for the abnormalities observed. When the amounts of urine and the specific gravity are practically the same reclining or up and about, this may be regarded as a sign of sclerosis of the kidney.

Lyon Chirurgical, Lyons

September, VIII, No. 3, pp. 245-368

68 Fracture of the Ankle. (Fractures du cou-de-pied; Type marginal postérieur.) E. Destot.
69 Grafts of Blood-Vessels. (Greffes vasculaires.) E. Villard and E. Perrin.
70 Tuberculosis of the Appendix. (Cas de tuberculose hypertrophique de l'appendice.) R. Leriche.

Lyon Médical, Lyons

September 1, XLIV, No. 35, pp. 341-376

71 The Pathologic Anatomy of Certain Severe Nervous Diseases Without Apparent Lesions. L. Bériel. Commenced in No. 33.
72 Origin of Lactic Acid. R. Lépine.

September 8, No. 36, pp. 377-420

73 *Elimination of Salvarsan in the Urine. J. Escallon.
74 Not Necessary to Wait for Cataract to Be Entirely Ripe. (Faut-il nécessairement attendre la maturité complète de la cataracte pour l'opérer?) Grand-Clement.

73. **Elimination of Salvarsan in the Urine.**—Escallon states that after ingestion of salvarsan, arsenic is eliminated in the urine and a simple color reaction may be used to demonstrate it: Acidulate 7 or 8 c.c. of urine with a few drops of hydrochloric acid; add 3 or 4 drops of sodium nitrate, 10 per cent.; then a few drops of 10 per cent. alkaline resorcin, and finally a drop or two of sodium hydroxid. A bright-red color indicates arsenic, and a color scale may be worked out showing the relative amount. He gives curves showing the time of maximum elimination.

Presse Médicale, Paris

September 4, XX, No. 72, pp. 729-736

75 Auscultation of Whispering Voice. (Transmission de la voix chuchotée.) E. Rist.
76 *Fractures in Children. (Les traumatismes osseux.) Kirmisson.

September 7, No. 73, pp. 737-748

77 Hereditary Dystrophy of Skull and Face. (Dysostose craniofaciale héréditaire.) O. Crouzon.
78 Treatment of Talipes. (Le pied bot congénital et son traitement.) M. Savariaud.
79 Psychoses in Measles and Acute Tonsillitis. (Etude des psychoses infectieuses.) L. Lagane.

September 11, No. 74, pp. 749-756

80 Imagined Traumatic Origin for Disease. (Quelques étiologies traumatiques imaginaires.) A. Broca.
81 Acromegaly. Briquet.

76. **Fractures in Children.**—Kirmisson discusses in particular incomplete fractures, the periosteum intact, and fracture of the ulna with dislocation of the head of the radius. Children are peculiarly liable to subperiosteal fracture and the kind known as green-stick fracture. Roentgenoscopy is sometimes the only means for detecting the former. The green-stick fracture is often an unsuspected cause of coxa vara. The fact that the child is able to walk on the injured leg apparently excludes the idea of fracture. In a typical case of the kind a child broke its arm in a fall but was able to walk, and the simultaneous injury of the neck of the femur was not suspected until walking became more and more difficult in a day or so. Fracture of the ulna a little above the middle of the bone was always accompanied by dislocation of the head of the radius in the eighty-six cases of the kind compiled by Perrin in 1909; all but thirty-four were in children, and the left arm was generally the one involved. One of Kirmisson's patients was only 33 months old. The head of the radius should always be examined in such cases; with simple fracture of the forearm there is very rarely any considerable swelling above, and consequently any tendency to protrusion above should suggest dislocation of the head of the radius. In treatment this is the most important point to be borne in mind. The dislocation is everything, the fracture comparatively nothing, as severe deformity results when the dislocation does not get proper treatment. The parents must be impressed with the necessity for reduction under general anesthesia. The radius reduced under extension and counterextension will serve as a support for the fractured ulna. Even if the arm is shorter than its mate, this is far preferable to the disturbances inevitable when the dislocation of the radius is left untreated.

Revue de Chirurgie, Paris

September, XXXII, No. 9, pp. 349-516

82 Tardy and Transient External Oculomotor Paralysis After Fracture of the Skull; Two Cases. A. Broca and B. Desplas
83 Fracture of the Posterior Margin of the Tibia. E. Quénu.
84 *Successful Grafts of Joints. (Les greffes articulaires totales chez l'homme.) J. Ducuing. Commenced in No. 8.

84. **Grafts of Joints.**—Ducuing summarizes the details of nineteen cases in which a whole or part of a joint was grafted into a limb. He gives a number of illustrations and discusses whether the graft is merely tolerated as a harmless foreign body or really heals into place as part of the organism. Be this as it may, the functional results attained to date are extremely encouraging and justify wide application of the measure in appropriate cases. Lexer has had the greatest experience in this line; Vaughan is the only American cited. One of Lexer's patients had part of the tibia and part of the knee-joint thus engrafted after removal of a sarcoma. The graft was taken from another patient's leg just amputated

for gangrene. It healed in place and the functional results were excellent sixteen months afterward, but the man became obsessed with the idea that the bone came from another person, and insisted on amputation of the leg which had to be done to save his reason. Only three of the cases cited refer to transplantation of an entire joint with capsule and synovialis (Lexer, Büchmann and Vaughan) with necropsy in the latter's case.

Revue de Gynécologie, Paris

June, XVIII, No. 6, pp. 561-684

85 *Remote Results of Ventral Fixation of the Uterus. (Les résultats éloignés des hystéropexies abdominales.) L. Bazy.
86 *Gunshot Wounds of the Spleen. II. (Les plaies de la rate par coup de feu.) M. Guibé.

85. **Ileus Consecutive to Ventrofixation.**—Bazy calls attention anew to the danger of obstruction of the intestine by the long bridge which generally forms between the uterus and the abdominal wall when the round ligaments are fastened together or separately to the abdominal wall, or the fundus or isthmus is fastened to the wall. He thought that fixation at the isthmus escaped this danger until he learned the contrary from a recent case. The isthmic hysteropexy had become in time a fundal fixation; a loop of intestine had become locked in the narrow passage thus formed and this intra-abdominal intraperitoneal hernia would have certainly caused serious trouble if it had not been discovered early in the course of an operation for salpingitis. Thus all forms of direct ventrofixation are perilous, while with the Webster indirect technic, Bazy says, the uterus is left in its physiologic place and in practically normal conditions.

86. **Gunshot Wounds of the Spleen.**—Guibé has compiled 108 cases of this kind, including several never before published. They teach that after a gunshot wound of the spleen there is grave danger of fatal hemorrhage, primary or secondary. It is difficult to suture a bullet wound in the spleen but it was done successfully in eight of the fourteen cases in which it was attempted, and study of the fatal cases shows that no other treatment could have forestalled the fatal termination. On account of the tediousness of a suturing operation and the rarity of the indications directly calling for it, tamponing was resorted to more frequently, the records showing that this was the reliance in seventeen cases, but only seven of these patients recovered. In several of the cases the tampon did not succeed in arresting the hemorrhage. In fifty-five cases the spleen was removed at once and twenty-eight of the patients recovered. Splenectomy is simpler and easier than suturing and is safer than tamponing; drainage is not required if the operation was aseptic and there were no lesions of hollow organs. The entire material is classified and the case-histories summarized.

Revue Médicale de la Suisse Romande, Geneva

July, XXXII, No. 7, pp. 501-564

87 *Fat Embolism. (Sur l'embolie graisseuse.) H. Beitzke.
88 Technic for Abdominal Hysterectomy for Cancer. (Rôle du tamponnement, du drainage et de la péritonisation dans la lutte contre l'infection lors de l'extirpation abdominale du cancer du col de l'utérus—operation de Freund-Wertheim.) O. Beuttner.
89 Negri Bodies in Diagnosis of Rabies. (Diagnostic de la rage par la recherche des corps de Negri.) E. Marignac.
90 Partial Isolation in Treatment of Psychoneuroses. (L'isolement cénobitique dans les psychoneuroses.) D. Pachantoni.

87. **Fat Embolism.**—In Beitzke's case a man of 54, whose leg had been amputated a year before, in getting out of a train, fell directly on the stump, bruising it a little and also the muscles of the outer aspect of the thigh on the same side. The injuries seemed trifling, but in three hours serious symptoms developed, extreme dyspnea and weakness, copious sweating and nausea, and in three more hours he sank into apparently tranquil profound sleep, the limbs relaxed and no symptoms suggesting a focus in the brain. He swallowed fluids given him but it was impossible to rouse him. The temperature rose to 39 and 40 C. and the pulse was 120. He died the next day without regaining consciousness. Nothing could be found at necropsy to explain this death until the microscope revealed fat embolism in the lungs and brain. There had been no fracture, and merely the concussion of the bones had started the embolism. Concussion of a fractured bone or after an amputation seems to be particularly dangerous from the standpoint of fat embolism. After an accident in which fat embolism is liable, the patients should be guarded against long transportation and premature massage, to avert danger of fat embolism. Beitzke thinks that Wilms' method of an artificial fistula into the thoracic duct, to divert the course of the fat being carried to the lungs by the lymphatic system, might be applied as a last resort in desperate cases. Although the greater proportion of the fat is passed along in the blood vessels, yet the fat in the thoracic duct may be the last straw to overcome the resistance, and hence Wilms' method should be borne in mind.

Revue Mens. de Gyn., d'Obstét. et de Pédiatrie, Paris

August, VII, No. 8, pp. 465-512

91 *Operative Treatment of Meningeal Hemorrhage in the Newly Born. R. Gilles.
92 Cystic Disease of the Placenta. (Kystes du placenta.) F. Masay and A. Louyot.
93 *Present Status of Momburg Belt Constriction to Arrest Hemorrhage. (L'hémostase par constriction élastique de la taille en obstétrique et en gynécologie.) L. Pierra.

91. **Meningeal Hemorrhage in the Newly Born.**—Gilles reports two cases in which he saved the infants by a decompressive operation. In one he relieved the compression by lumbar puncture; in the other, when this proved ineffectual, he punctured the bulging anterior fontanelle at three points, aspirating blood each time. The result in both cases was excellent, the convulsions ceasing and the children developing apparently normally afterward. He urges that these two decompressive operations are simple and easy, requiring no special practice or skill, and the general practitioner, the accoucheur, should be prompt to resort to them at need. The Cushing and Simmons technics are more radical and thorough but they are scarcely practicable in the home emergencies while lumbar puncture and puncture of the anterior fontanelle will often prove all that is necessary to arrest the convulsions. If trouble develops later from non-absorption of the extravasated blood, it will then be time to do a more radical operation when the child is able to stand it. The needle can be introduced slanting, a little to one side of the median line, to avoid the longitudinal sinus, but when the fontanelle is bulging much there need be no danger of injuring the brain pushed back by the accumulating blood. Broca reported not long ago very encouraging results from an operation to remove the relics of old meningeal hemorrhage, and Krause has also reported two cases of the kind.

93. **Momburg Belt Constriction.**—Pierra reviews the history of and experiences on record to date with hemostasis by means of an elastic band or rubber tube wound around the waist (as illustrated in THE JOURNAL, Oct. 30, 1909, p. 1519). The method requires great care and caution; many accidents have occurred from defective technic. It is almost invariably effectual as a prophylactic measure against hemorrhage in gynecologic and obstetric operations, but the progress of operative technic has rendered this aid superfluous. On the other hand, he says, it is destined to render very valuable service in emergencies, in serious uterine hemorrhage, especially uncontrollable post-partum hemorrhage; under these conditions it not only arrests the hemorrhage for the time being but possibly permanently. Although it is generally effectual in checking hemorrhage, yet the constriction from the elastic rubber tube wound around the waist is by no means always entirely harmless, especially for the cardiovascular apparatus. Consequently it should never be applied under any pretext when the heart and vessels are not absolutely sound (arteriosclerosis, myocarditis, etc.), and the procedure should never be applied to elderly or obese women.

Semaine Médicale, Paris

September 11, XXXII, No. 37, pp. 433-444

94 Treatment of Surgical Tuberculosis. (Les principes modernes dans le traitement des tuberculoses dites chirurgicales.) F. de Quervain.

Archiv für klinische Chirurgie, Berlin

XCIX, No. 1, pp. 1-303. Last indexed Oct. 12, p. 1410

95 Transplantation of Joints. (Ueber den histologischen Vorgang bei der Transplantation von Gelenkenden, insbes. über die Transplantationsfähigkeit von Gelenkknorpel und Epiphysenknorpel.) G. Axhausen.

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96 Traumatic Brain Ventricle Cyst. (Traumatische Ventrikelcyste; Deckung des eröffneten Ventrikels durch Fascie.) H. v. Haberer.
97 *Diagnosis and Operative Treatment of Traumatic Subdural Hemorrhage. K. Henschen.
98 Disadvantages of Intravenous Ether Anesthesia. N. Beresnegowsky.
99 Diagnosis and Treatment of Chronic Pancreatitis; Eight Cases. Gulcke.
100 Local Anesthesia in Small Pelvis. (Zur Localanästhesie im kleinen Becken.) C. Franke and H. L. Posner.
101 Pharmacologic Study of Ethyl Chlorid General Anesthesia. (Die Chloräthylnarkose.) R. König.
102 Technic for Operations on Costal Cartilages. (Ueber die Wundgestaltung bei Operationen an den Rippenknorpeln.) G. Axhausen.
103 Reflexes Originating in the Pleura. (Ueber pleurogene Extremitätenreflexe.) G. v. Saar.
104 Lime Deposits Around Shoulder. (Ueber Kalkablagerungen in der Umgebung des Schultergelenks und ihre Beziehungen zur Periarthritis scapulo-humeralis.) L. Wrede.
105 Foreign Bodies in Lung and Pleura After Stab and Impalement Accidents. (Ueber Fremdkörper der Lunge und Pleurahöhle nach Stich- und Pfählungsverletzungen.) E. Hesse.
106 The Blood-Picture with Myxedema and Cretinoid Conditions. (Das Blutbild bei Cachexia thyreopriva.) T. Kocher.

97. **Subdural Hemorrhage.**—Henschen discusses the diagnosis of traumatic subdural hemorrhage in the newly born, in children and in adults, and comments on the excellent results that have followed lumbar puncture in new born babes. If this fails, he suggests a small decompressive trephining of the space below the tentorium back of the mastoid process. In eighty cases of the 246 he has compiled, subdural extravasation proved fatal while 68.1 per cent. of the 166 patients operated on recovered. The usual site is the frontal-parietal region. Three cases are described in detail to show the advantages of preparing to operate in every case of trauma of the skull, ready to do a decompressive operation if signs of compression develop. He left a drain in the opening in the cases reported. Operative treatment should be the rule even in the moderately severe cases, to ward off post-traumatic epilepsy. Even if the accumulated blood is finally absorbed, yet the brain may be gravely injured in the interim.

Beiträge zur klinischen Chirurgie, Tübingen

August, LXXIX, No. 3, pp. 477-720

107 *Tissue Extract in Treatment of Hemophilia. (Studien zum Wesen und zur Behandlung der Hämophilie.) H. Schloessmann.
108 Blocking the Brachial Plexus. (Die Anästhesierung des Plexus brachialis.) D. Kulenkampff.
109 Ultimate Outcome of Operations for Cleft Palate. (Spätfolgen des operativen Gaumenspaltverschlusses.) R. Hagemann.
110 External Hydrocephalus from Surgical Standpoint. E. Pagenstecher.
111 Origin of Gall-Stones. (Entstehung der Gallensteine in ihrer klinischen Beziehung.) S. Kunika.
112 Chronic Appendicitis. (Zur Frage der rein chronisch verlaufenden Appendicitis.) E. Melchior and A. Löser.
113 Differential Pressure Procedures. (Bewertung des Ueber- und Unterdruckverfahrens.) M. Tiegel.
114 Dangers of Nephrotomy. ("Beitrag zu den Gefahren der Nephrotomie.") M. Zondek.

107. **Hemophilia.**—Schloessmann devotes nearly eighty pages to the detailed account of experimental and clinical experiences which seem to show the futility of attempting to influence the coagulating power of the blood by direct administration of any ingredient normally in the blood. The only way in which it seems possible to influence it is by biologic means. He relates a suggestive experience with a hemophilic patient who was bleeding freely from an excoriation in the corner of the mouth after extraction of a tooth. He squeezed and kneaded the tissues around the tiny wound in the corner of the mouth, hoping thus to flood the spot with tissue juices which he hoped might contain the thrombokinase, the substance from which the coagulation-producing thrombin is formed and which seems to be lacking in hemophilic blood. The result was an instantaneous success. When the hemorrhage recurred later two or three times it was arrested at once each time by squeezing the region with the fingers. This suggested the systematic use of tissue extract for treatment of hemophilia, and his results with it have been very encouraging. As he has so much fresh goiter tissue material at his disposal, he has been utilizing it for the purpose and commends it as the most effectual means yet known to control hemophilic hemorrhage on local application. Its absolute harmlessness is not the least of its advantages, as also the possibility of effectually sterilizing it and the fact that it seems to retain its properties for a long time. Attempts to administer it internally or by subcutaneous or intravenous injection proved disappointing, and untoward by-effects were not infrequently observed. He places the bleeding spot in a hemophiliac in such a position that the tissue extract can stand on or in it for five or ten minutes, and he refrains from tamponing. He has had no occasion yet to apply the tissue extract in a serious hemophilic hemorrhage, but says that he would approach it now with confidence, armed with the tissue extract. He uses only parenchymatous hyperplastic thyroid material, discarding cystic or colloidal goiters.

Berliner klinische Wochenschrift

September 2, XLIX, No. 36, pp. 1689-1732

115 Vital Staining and Chemotherapy. (Vitale Färbung und Chemotherapie.) E. Goldmann.
116 Vital Staining of Experimental Lesions in Central Nervous System. J. T. MacCurdy and H. M. Evans (Baltimore).
117 Present Status of Question as to Connection Between Primary Anomalies of the Thorax and Development of Disease in the Lungs. W. A. Freund.
118 Serotherapy of Pneumonia. (Behandlung der Pneumonie mit dem Neufeld-Händel'schen Pneumokokkenserum.) A. Géronne.
119 *Corsets and Breathing in the Upper Part of the Chest. (Korsett und Lungenspitzenatmung.) F. Hirschfeld and A. Loewy.
120 *Toxicity of Methyl and Ethyl Alcohol. A. Langgaard.
121 Hemorrhage in Pons and Medulla Oblongata in Methyl Alcohol Poisoning. (Blutung in Brücke und verlängertem Mark, speziell im Vagusgebiet bei Methylalkoholvergiftung des Menschen.) L. Bürger.
122 Biologic Test for Pregnancy by Ferments in the Blood. (Die biologische Schwangerschaftsdiagnose nach Abderhalden und ihre klinische Bedeutung.) E. Frank and F. Heimann.
123 Technic for Operative Treatment of Inflamed Uterus Adnexa. (Behandlung der entzündlichen Adnexerkrankungen mit bes. Berücksichtigung einer neuen Operationsmethode.) H. Töpfer.
124 The Soy Bean as an Article of Food. (Nährwert und Verwendung der Sojabohne beim Menschen.) H. Neumann.
125 *Calcium in Treatment of Hemorrhage. (Die theoretischen Grundlagen der Kalktherapie bei Blutungen.) N. Voorhoeve.
126 Diathermia in Internal Disease. (Ueber Diathermiebehandlung bei Herz-, Lungen- und Nierenkranken.) E. Kalker.
127 The Cerebrospinal Fluid and Salvarsan. A. Zaloziecki.

119. **Corsets and Respiration at the Apex.**—Hirschfeld and Loewy found that, contrary to the general opinion, the wearing of a corset had a favorable influence on the development of the thorax in certain growing girls with the so-called paralytic chests. The most striking case was that of a girl of 14 with a flat chest and general asthenia. There was an inherited tuberculous taint and recurring bronchitis but no signs of actual tuberculosis. Contrary to the advice of her physician, she wore a tight corset and in the course of the next few years her chest developed notably and the bronchitis recurred at longer intervals. They tabulate the findings in regard to the frequency, volume and depth of the respiration and the vital capacity in four women and two men as recorded while a corset was worn or not. The curves show that the upper part of the chest expands better with the corset than without. The depth of the respiration was always less, showing that the lower part of the thorax was hindered in its expansion, but the upper part of the chest expanded much more. This increased expansion of the upper part of the chest during expiration is a very desirable factor in treatment in all cases in which the defective respiration in the upper part of the lungs invites the development of tuberculosis. In such cases as these it seems wise to advise the use of a corset, and the favorable results here reported are explained as not a mere coincidence. On the other hand, when the apex is already affected, the corset should be discarded. The principle here is to spare the diseased part all possible functional activity.

120. **Toxicity of Methyl and Ordinary Alcohol.**—Langgaard reports extensive experimental research on rabbits which showed that in small, daily repeated doses, methyl alcohol is more toxic than ethyl alcohol. But in large, single doses, ethyl alcohol is decidedly more toxic than the other.

125. **Calcium in Treatment of Hemorrhage.**—Voorhoebe discusses the theoretical bases for the therapeutic use of calcium in treatment of hemorrhage. He states that it is established that the calcium content of the blood can be increased by administering calcium in large doses. The kind of food and its lime content are factors that should be borne in mind. A low proportion of calcium in the blood is not always the cause for the tendency to hemorrhage, and consequently the coagulation of the blood is not always enhanced by increasing its

calcium content. The calcium is evidently only one of the factors inducing coagulation. Calcium is an ingredient of our daily food; we probably average 2 gm. in the twenty-four hours, but it depends on the nature of the food, and the extremes may range from 0.5 to 5 gm. When given for therapeutic purposes the dosage is generally no more than is included in the normal range. For instance, when 3 gm. of calcium lactate is given, this corresponds only to about 0.5 gm. of extra lime. This amount is less than is contained in a quart of cow's milk which averages 1.6 gm. lime (CaO). The patient would thus receive much more of the calcium salts if he were given a pint of milk extra than a few grams of calcium lactate. In the experiments related, 15 gm. of calcium lactate increased the calcium content of the blood while 3 gm. had little if any influence on it.

Correspondenz-Blatt für Schweizer Aerzte, Basel

September 10, XLII, No. 26, pp. 969-1000

128 *Magnesium Sulphate in Tetanus. (Erfolge einer neueren Behandlungsmethode bei Tetanus.) T. Kocher.
129 Propaganda for Breast-Nursing. (Stillen und Stillunfähigkeit.) J. B. Karrer.

128. **Magnesium Sulphate in Treatment of Tetanus.**—Kocher has slightly modified Meltzer's technic for intraspinal injection of magnesium sulphate, and has applied it in three cases of tetanus with remarkable success. He reviews the history of the method and its mechanism, and says that the action of the drug can be limited to the region desired by raising or lowering the patient's head and shoulders. He thinks that Meltzer's 25 per cent. solution is unnecessarily strong; he used only a 15 per cent. strength and remarks that a 10 per cent. might have answered the purpose. He injected up to 10 c.c.; this corresponds to Meltzer's estimate of 0.03 per kilogram of body weight. The greater susceptibility of children to toxic action must be borne in mind in treating a child; 2 c.c. would be the maximal dose for a child weighing only 10 kilograms (about 22 pounds). Special care must be taken in repeating the dose; an interval of twenty-four hours seems to be sufficient. If the dose is repeated sooner than this there is danger of cumulative action. After injection of 7 c.c. and five hours later of 10 c.c. of a 15 per cent. solution one patient reacted with deep sleep and stertorous respiration. Kocher warns that if no cerebrospinal fluid flows when the spinal canal is punctured, the idea of injecting any solution should be abandoned as too dangerous; this applies particularly to magnesium sulphate as it is not an indifferent substance. He adds that the prophylactic use of tetanus serum should not be neglected; the magnesium sulphate is only an adjuvant to this. The curative action of the serum is far from certain, and he warns of Peck's experience showing the danger of combining the two methods of treatment or following one with the other too closely, before the action of the first has subsided. Sedatives and narcotics have only symptomatic efficacy; too large doses may do harm and possibly be responsible for some of the fatalities in tetanus after the paroxysms have ceased. The action of magnesium sulphate seems to be about equivalent to that of prolonged administration of hypnotics, and he thinks that the sulphate is the lesser of the two evils. He regards the Meltzer method thus as a very valuable addition to our means of treating tetanus, in the sense that it makes it possible to ward off danger until the toxin which has penetrated into the nerve substance has lost its power to harm.

Deutsches Archiv für klinische Medizin, Leipsic

CVII, Nos. 5-6, pp. 411-602. Last indexed Oct. 12

130 Experimental Research on Arteriosclerosis. C. Hirsch and O. Thorspecken.
131 Hemorrhage in the Pons. (I. Brückenblutung; II. Akute pontine Encephalitis hemorrhagica.) H. Eichhorst.
132 Albumin Destruction During Fever. (Zur Frage des toxogenen Eiweisszerfalls im Fieber des Menschen.) A. Rolland.
133 Gaseous Interchanges with Pneumothorax, Pneumonia, Pleurisy, Stenosis of the Trachea, Etc. (Untersuchungen über den respiratorischen Gaswechsel bei Erkrankungen der Lunge und der luftzuführenden Wege.) O. Bruns.
134 Echinococcus Disease of the Lung. E. Behrenroth.
135 *Disturbances in Gastric Secretion in Hyperthyroidism. (Die sekretorischen Störungen des Magens bei der Basedowschen Krankheit.) J. M. Wolpe.
136 Histology of Anaphylactic Phenomena. S. Ishioka.
137 Radiography of Infant's Chest. (Zur Deutung des Thoraxradiogramms beim Säugling.) E. Benjamin and T. Goett.
138 Influence on Growth and Blood-Picture of Disturbances in the Ductless Glands. (Ueber Eunucholde.) H. Guggenheimer.
139 Radioscopy of Gastroptosis. (Weitere Aufschlüsse über den Befund und die Genese der Gastroptose durch das Röntgenbild.) E. Schlesinger.
140 Inefficacy of Atophan in Leukemia. (Wirkung von Atophan bei chronischer myeloischer Leukämie.) Rösler and H. Jarczyk.

135. **Stomach Symptoms in Exophthalmic Goiter.**—Wolpe made a study of the stomach secretion in twenty-three cases of Basedow's disease—some of them typical cases and some of them *formes frustes*—with the following results: In the majority of cases there was gastric achylia, most pronounced in the most typical cases. There was a parallelism between the hydrochloric acid secretion and the strength of the gastric juice in pepsin and fat-splitting ferments. The free and combined hydrochloric acid and total acidity were all markedly decreased, and the chymification of the stomach contents was seriously impaired. In old, untreated cases there was a true atrophy of the gastric glands. The digestive disturbances and diarrhea seemed to be of gastric origin but it was impossible to determine how far they were influenced by disturbances of pancreatic secretion, stimulation of the abdominal sympathetic, intoxication by the excessive thyroid secretion, etc. The stomach symptoms are the result of a constitutional asthenia caused by the thyroid poison. The diarrhea improved on a nitrogen-free diet and grew worse on a meat diet.

Deutsche medizinische Wochenschrift, Berlin

September 5, XXXVIII, No. 36, pp. 1673-1720

141 *The Puerperium. (Hygiene des Wochenbettes.) L. Seitz.
142 *Spinal Cord Tumors. (Weiterer Beitrag zur Diagnose und operativen Behandlung von Geschwülsten der Rückenmarkshäute und des Rückenmarks.) F. Schultze.
143 *Tendon Transplantation in Treatment of Infantile Spinal Paralysis. (Sehnenüberpflanzung in der Behandlung der spinalen Kinderlähmung; ihre Indikation, Technik und Resultate.) O. Vulpius.
144 Elective Culture Media for Cholera Germs. (Zur Frage der Choleraelektivnährboden.) P. Esch.
145 Childbirth in Paralytic Dementia; Two Cases. K. Löwenhaupt.
146 *Diabetes and Pregnancy. (Diabetes und Schwangerschaft.) A. Bingel.
147 Febrile Abortion. M. Jacoby.
148 Artificial Fecundation with Bilateral Epididymitis. (Ueber künstliche Befruchtung bei Epididymitis duplex.) H. O. Rohleder.
149 Reinfection with Syphilis. (Beitrag zur Reinfectio syphilitica.) F. Zimmern.
150 *Cirrhosis of the Liver of Tuberculous Origin. (Zur Frage der Lebercirrhose tuberkulösen Ursprungs.) R. Hertz.
151 Edema in Lower Esophagus Caused by Vomiting. (Ueber Oedem des unteren Oesophagusabschnittes als Folge von Erbrechen.) F. Rost.
152 Treatment of Psoriasis with Carbon-Dioxid Snow. (Behandlung der Psoriasis mittels Kälteanwendung.) H. Axmann.
153 Oxygen Poisoning. (Zur Frage der Sauerstoffvergiftung.) A. Schmidt and O. David.
154 Advertising of Measures to Prevent Conception and the Medical Press. (Die Ankündigung unzüchtiger Gegenstände und die medizinische Presse.) J. Schwalbe.

September 12, No. 37, pp. 1721-1768

155 *Insomnia. (Behandlung der Schlaflosigkeit.) E. Meyer.
156 Elimination of Sodium Chlorid by the Kidney. (Die Rolle der gesunden und der kranken Niere bei der Kochsalzausscheidung.) Borchardt.
157 *Importance of Sugar for Heart Functioning. (Die "Entartungsreaktion" des Herzmuskels.) A. Adamkiewicz.
158 Hypophysis Extracts in Obstetrics. (Die Behandlung der Wehenschwäche mit bes. Berücksichtigung der Hypophysenextraktpräparate als Wehenmittel.) H. Fries.
159 Toxicity of Urine in Acute Infectious Diseases. (Giftigkeit des Harns bei Masern und anderen Infektionskrankheiten.) H. Aronson and P. Sommerfeld.
160 Conserved Breast Milk in Infant-Feeding. (Verwendung konservierter Ammenmilch zur Ernährung von Säuglingen.) J. Peiser.
161 Compensating Growth of Fibula with Tibia Defect. (Ueber Wachstumsvermehrung der Fibula.) W. Böcker.
162 The Paradoxic Serums in the Wassermann Reaction. (Bedeutung der paradoxen Sera bei der Wa. R.) B. P. Sormani.
163 The Basic Principles of Ethics. (Die Grundlagen der Ethik.) B. Kern. Commenced in No. 36.

141. **Hygiene of the Puerperium.**—Among the points emphasized by Seitz are that except for tuberculosis, severe puerperal fever and possibly syphilis, there are no diseases on the part of the mother which contra-indicate breast feeding. Also that accumulation of feces may prevent the normal escape of lochia; this explains the subsidence of fever in some cases after the bowels have moved. When the temperature goes up the fourth or fifth day, a dose of castor oil may bring it down to normal again. A warm saline enema the second day may start proper bowel functioning. He does not approve of letting the patient get up early if there is any possibility of her resuming house-

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hold tasks; it is far better to keep her quiet in bed and ensure exercise of the muscles by frequent changes of the position in bed. Restoration of normal elasticity in the stretched abdominal walls is promoted by having the patient lie flat in bed without a pillow, her feet against the footboard, and then raise herself very slowly from the horizontal to a sitting position, her hands crossed on her breast and then lie down flat again. This exercise has a wonderfully powerful action on the muscles in the abdominal wall; it should be repeated ten or twenty times three times a day, and is most effectual the more slowly it is done. The muscles which counteract a tendency to prolapse of the uterus later can be strengthened by exercising the gluteal muscles and the adductors of the thigh, the attendant resisting the bringing together of the wide-spread knees. On repeating this exercise the levator ani and adductors can be seen vigorously contracting. With these exercises the desired result is attained while the stretched abdominal walls are allowed to recuperate in peace without further strain such as is inevitable when the woman is up and about. Any tendency to fever contra-indicates both active and passive exercise as liable to favor the spread of septic processes.

142. **Tumors of the Spinal Cord.**—Schultze states that seven have been permanently cured of the nine patients with non-malignant tumors compressing the spinal cord which he diagnosed and had removed over five years ago. He states that in five cases the compression of the spinal cord and the presence of the tumor caused no pain; a chondroma in one case cast no shadow on roentgenoscopy. A recent case teaches that operative measures may be successful even with a tumor in the cord.

143. **Tendon Transplantation.**—Vulpius discusses tendon transplantation in treatment of infantile spinal paralysis, dwelling in particular on the lessons he has learned from his mistakes. The Codivilla technic of fixation of the tendon to the periosteum is a great advance. The sound tendon is cut at the periphery enough to permit it to reach its new point of attachment, but instead of suturing it to it directly, it is first drawn up through the incision in the skin and is then worked down again to the place where it is to be sutured, working it through the tendon tissues of the paralyzed muscle.

146. **Diabetes and Pregnancy.**—Bingel reports a case in which the woman developed symptoms of diabetes at the sixth month of her second pregnancy, but under appropriate dieting the symptoms subsided and the diabetes did not seem to affect the pregnancy in any way. If the diabetes shows no signs of aggravation from the pregnancy, treatment should be the same as in the non-pregnant.

150. **Cirrhosis of the Liver of Tuberculous Origin.**—Hertz reports three cases with necropsy of two. The affection develops in two stages. The first may progress without attracting the patient's attention, but when the second stage develops, with ascites and gastro-intestinal disturbances, death is the rule in two or three months. The ascites is not very abundant but the liver is hard and tender, the spleen enlarged, the complexion sallow, but there is not much tendency to jaundice. The temperature runs up high but the most important differentiating point in the cirrhosis with hypertrophy and fatty degeneration in question is the absence of signs pointing to functional insufficiency of the liver. At the same time, cachexia soon follows and the patients die in a comatose condition.

155. **Treatment of Sleeplessness.**—Meyer reiterates that the main thing in treatment of insomnia is to discover and remedy the cause. Sleeplessness as an isolated disturbance without other morbid phenomena is extremely rare; it is most liable to occur as the last trace of some sickness, especially after the patient has otherwise entirely recovered from influenza. It may occur likewise periodically as a kind of equivalent for a psychosis. But under other conditions the insomnia is always the consequence of other disturbance or merely one symptom of something wrong; overfatigue and emotional stress may interfere with sleep even in apparently normal children. The hygiene of sleep with all its apparent trifles and means to take the patient's mind off the train of thought of the day may accomplish wonders.

157. **Importance of Sugar for the Functioning of the Myocardium.**—Adamkiewicz regards the transient irregular heart action liable to follow excessive physical exercise or drinking of tea or coffee or carbonated waters or eating foods on the point of spoiling, as equivalent to the electric reaction of degeneration in a diseased muscle. A sound heart bears the above influences without signs of injury, but a defectively nourished, weakened, oversensitive heart responds with arhythmia as a tired horse breaks its even trot. When this occurs it depends on the treatment whether the heart is brought back to normal condition or driven into an actual breakdown. The latter is inevitable if the arhythmia in these cases is interpreted as a sign of "fat heart" and the diet is restricted. On the other hand, the myocardium promptly recuperates and grows strong again if its weakness is recognized and it is supplied with proper nourishment, and this, he asserts, is mainly sugar. He has long been teaching that sugar supplies the energy for the muscles and especially for the heart muscle, and the latter suffers from lack of the needed proportion of sugar in the food and responds with increased energy when the sugar is supplied. It is thus possible to cure the tendency to these attacks of transient arhythmia merely by eating more sugar; the heart, he insists, is driven by combustion of sugar as an engine is driven by the burning of coal. These views met with a striking confirmation recently. A man in the fifties had an attack of rheumatism in 1908 and various dietetic restrictions were imposed. Among other things, he gave up eating sugar, and the rheumatism disappeared in the course of three months. He continued to do without sugar and felt well for a few months, but then he began to have attacks of weakness on the part of the heart, a tendency to syncope and periods of arhythmia and imperceptible pulse. The attacks recurred so frequently that he had to give up his business and stay in the house. After about a year he happened to see a notice of Adamkiewicz' work on sugar as the main source for the energy and rhythm of the heart, with arguments that deprivation of sugar robbed the heart of its strength and rhythmical activity. He resumed the eating of sugar and began to improve at once. When fully restored he took a trip to Vienna from Scotland to present a personal living testimony to the truth of Adamkiewicz' assertions in regard to the importance of sugar for the proper functioning of the heart.

Münchener medizinische Wochenschrift

September 3, LIX, No. 36, pp. 1937-1984

164 Cultivation of Spirochetes of Relapsing Fever. (Reinzüchtung der Spirochäten des europäischen, des amerikanischen und des afrikanischen Rückfallfiebers.) H. Noguchi.

165 Acute Blindness from Methyl Alcohol and Other Poisonings. E. Harnack.

166 *Dubious Experimental Findings with Supposed Tubercle Bacilli Found in the Blood of the Tuberculous. (Ueber das Vorkommen von Tuberkelbazillen im Blutstrom.) E. Rumpf.

167 *Meningococcus in Pus from the Ear. (Vorkommen von Meningokokken im Ohreiter.) Doering.

168 *Diagnosis of Pulmonary Tuberculosis in Children. (Zur Diagnose der Lungentuberkulose im Kindesalter.) H. Vogt.

169 Familial Right Facial Paralysis; Four Cases in Two Generations. (Gehäufte Fälle von Fazialislähmung in einer Familie.) F. W. A. Weber.

170 Membrane Obstructing Trachea After Tracheotomy. (Diaphragma der Trachea nach Tracheotomie.) K. Justi.

171 *Choked Disc After Salvarsan. (3 Fälle von höchstgradiger Stauungspapille nach Salvarsaninjektion bei Lues.) R. Vollert.

172 Hypersusceptibility to Salvarsan. (Zur Kasuistik der Ueberempfindlichkeitsreaktionen nach Salvarsaninjektionen.) C. Cronquist.

173 *Biologic Test of Pregnancy by Ferments in the Blood. (Weiterer Beitrag zur Diagnose der Schwangerschaft mittels der optischen Methode und dem Dialyslerverfahren.) E. Abderhalden.

September 10, No. 37, pp. 1985-2032

174 *The Specificity of the Tuberculin Reaction. H. Lildke and J. Sturm.

175 *The Cerebrospinal Fluid in Infectious Diseases. (Der Liquor cerebrospinalis bei Infektionskrankheiten, insbes. im Zusammenhang mit der Wassermannschen Reaktion bei Poliomyelitis acuta epidemica.) H. Schottmüller.

176 Concentric Contraction of the Pyloric Antrum. T. Hausmann.

177 Endoscopy of Nasopharynx and Larynx. (Zur endoskopischen Untersuchung des Nasenrachenraumes und des Kehlkopfes.) Oertel.

178 Operative Cure in a Case of Anthrax in the Intestine. J. E. Schmidt and H. Stoeber.

179 *Torsion of the Gall-Bladder. (Volvulus der Gallenblase.) G. Kubig.

180 Hip Support for Severe Paralysis. (Ein neuer Hüftstützapparat für schwere Lähmungen.) O. Vulpius.

181 Local Suppuration and Necrosis After Injection of a Salvarsan Preparation. (Unangenehme Begleiterscheinungen nach intramuskulärer Injektion von "Joha.") O. Steiger.

166. **Tubercle Bacilli in the Blood.**—Rumpf declares that his own and others' research has confirmed beyond question that tubercle bacilli occur far more often than hitherto supposed in the circulating blood, not only of the tuberculous but in health. More delicate bacteriologic technic has disclosed their presence with startling frequency. But at the same time inoculation of animals with blood containing the bacilli does not seem to transmit tuberculosis to the animals. Thirty-five guinea-pigs were inoculated with blood containing the bacilli from several patients with advanced tuberculosis, from some with the disease in an incipient form and from three clinically healthy physicians, who all had tubercle bacilli in their blood. Only three of the animals developed tuberculosis and one had dubious lesions. None of the others displayed any symptoms and when the animals were slaughtered after thirty-one weeks nothing suggesting tuberculous lesions was found in them. Rumpf suggests three possibilities to explain these strange findings: Either the supposed tubercle bacilli are not such, or the bacilli are not viable, or the blood vehicle in which they were injected protected the animal against them. Other experiments in which the bacilli were cultivated in pure cultures from the blood and the animals inoculated with the cultures alone, all resulted positively. Kennerknecht found tubercle bacilli in the blood in 91 per cent. of 120 children examined, including 74 per cent. of thirty-one children supposedly entirely free from tuberculosis. She inoculated thirteen guinea-pigs with the bacilli, with positive results in all. Rumpf adds that the longer and the more persevering the search, the larger the proportion of positive findings in regard to the presence of tubercle bacilli in the blood, both in the sick and the well, and he is very much puzzled over these revolutionary findings.

167. **Meningococci in Otitis.**—Doering reports three cases in which middle-ear disease proved to be the work of meningococci. In two cases the cocci were found in the pus of the chronic ear process, in the other in the lumbar puncture fluid.

168. **Diagnosis of Pulmonary Tuberculosis in Children.**—Vogt expatiates on the mistakes in diagnosing pulmonary tuberculosis in children. In the first place, he says, the manifestations of the exudative diathesis are not a sign of tuberculosis. They are frequently observed in infants giving a negative response to the tuberculin tests. When tuberculosis is superposed on the exudative diathesis it is liable to be particularly severe, but the symptoms of the latter, the tendency to phlyctenæ, blepharitis, chronic eczema and catarrhal affections of the mucous membranes—none of these should be regarded as a sign presumptive of tuberculosis. Another source of error is improper interpretation of the radiographic findings in the chest. Correct interpretation of the shadows cast by the hilus requires great experience and skill to avoid erroneous conclusions. Children are apt to run a subfebrile temperature from the slightest causes; even emotions are liable to send the temperature up, and the slightest infection in the upper air passages may keep the rectal temperature permanently at 38 C. The tuberculin tests should be accepted for the diagnosis of active tuberculosis only with decided restrictions. In infants an active tuberculous process leads almost invariably to progressive tuberculosis. In older children only the negative response to the tests is of clinical interest. Children may have a chronic lung affection which yet has nothing to do with tuberculosis; he has found this as common as true pulmonary tuberculosis in children between 2 and 10. The clinical picture is often that of recurring pneumonia but examination in the interim will reveal traces of trouble at the point where the pneumonia started. In other cases there are signs of infiltration at some point in the lungs and a tendency to diffuse bronchitis with occasional exacerbations. The course of the case and the previous history will generally clear up the diagnosis. With true pulmonary tuberculosis it rarely occurs that the process spreads in an acute manner and then promptly retrogresses, while this is the rule with bronchiolectasis. This may heal in time or it may persist into adult life and puzzle the internists then.

171. **Choked Disk After Salvarsan in Syphilis.**—Vollert cites Fejer's two cases and then reports three from his own experience in which choked disk developed in an extreme form after one or two injections of salvarsan. He says that neurorecurrences have certainly become much more frequent since salvarsan has been used, and he has never known nor heard of such extreme forms of choked disk in syphilis as he encountered in these cases.

173. **Ferments in the Blood in Diagnosis of Pregnancy.**—Abderhalden's biologic tests of the existence of a pregnancy were discussed editorially in THE JOURNAL September 14, p. 881. He here gives minute directions for the technic and expatiates on the importance of a test which will reveal pregnancy not only in women but in cows and horses.

174. **Specificity of the Tuberculin Reaction.**—In the research reported it proved impossible to elicit a reaction at all comparable to that elicited by tuberculin when tuberculous individuals were tested with extracts of typhoid or dysentery bacilli or colon bacilli, the mode of preparation and the technic being the same as for tuberculin. No reactions that could answer the purposes of diagnosis were obtained with any but the tuberculin.

175. **Changes in the Cerebrospinal Fluid in Infectious Diseases.**—Schottmüller declares that the fluid obtained by lumbar puncture is generally modified by an existing acute infection, the amount, the pressure and the cell content showing changes from normal even when there are no signs of actual meningitis. The lumbar puncture often proved of decided symptomatic benefit. He ascribes the changes in the fluid to invasion of the brain or meninges by germs from the blood but only in such small numbers that merely a circumscribed meningitis results. It is manifested in the increased amount, higher pressure and the larger number of cells; he does not think that the passage of toxins into the fluid is enough to explain these changes in the fluid, and inoculation of animals fails to show increased toxin content. But the changes are amply explained by assumption of a circumscribed infectious meningitis in contrast to the diffuse form. He thinks these terms should be adopted to express what hitherto has been styled "serous" and "purulent" meningitis. He found these changes marked in his three cases of croupous pneumonia, in four of staphylococcus sepsis, in streptococcus slow endocarditis, in typhoid and in acute poliomyelitis. In the latter disease the Wassermann reaction was positive in the blood at the height of the disease but not in the cerebrospinal fluid, and it became negative again as the disease subsided. If this finding in his four cases is confirmed by others, the Wassermann test may prove useful in differentiation of epidemic poliomyelitis in cases in which syphilis seems improbable. The subsidence of the reaction as the disease passes out of the acute phase—even with persisting paralysis—shows that the reaction indicates an active toxin in this disease the same as in syphilis.

179. **Torsion of the Gall-Bladder.**—Kubig compares his case with the three similar ones on record; in none was the diagnosis made during life, the symptoms having been ascribed to gall-stones, appendicitis, hydronephrosis or empyema of the gall-bladder. The twisted gall-bladder forms a kidney-shaped resistant object at the lower margin of the liver, not so movable as a wandering kidney. The ages of the patients ranged from 54 to 73.

St. Petersburger medizinische Zeitschrift

August 28, XXXVII, No. 16, pp. 235-248

182 Parthenogenesis in Man as Cause of Tumor Production. (Ueber Parthenogenese beim Menschen als Ursache von Geschwulstbildung.) A. Bertels.

183 Intermittent Hour-Glass Contraction of the Stomach. (Vom intermittierenden Sanduhrmagen.) O. v. Dehn.

Virchows Archiv, Berlin

July, CCIX, No. 1, pp. 1-160

184 Portrayal of Disease in Art. (Ueber Krankheitsdarstellung im Gemälde.) Bökelmann.

185 Amœboid Movements of Cancer-Cells. (Amöboide Bewegungen von Krebszellen als ein Faktor des invasiven und metastatischen Wachstums maligner Tumoren.) F. M. Hanes and R. R. Lambert (New York).

186 Adenomatous Growths in the Mamma. (Beiträge zum vergleichenden Studium der Tumoren.) S. S. Chalatow.

187 Cancer in Omphalomesenteric Duct. W. A. Michin.

188 The Various Blood Diseases All Different Stages of the Same Process. (Ueber die akute Pseudoleukämie und die Wechselbeziehungen zwischen den Blutkrankheiten.) S. M. Zypkin.

189 Biology of Relapsing Fever Germ. (Zur Biologie der Rekurrensfäden.) L. Fränkel.

190 Experimental Endocarditis. S. Saltykow.

191 Mechanism of the Heart-Beat. (Mechanismus des Herzstosses.) J. Trautwein.

192 Inflammation of the Umbilical Cord and Syphilis. (Nabelschnurentzündung und Syphilis.) M. Simmonds.

Wiener klinische Wochenschrift, Vienna

September 12, XXV, No. 37, pp. 1375-1404

193 *Treatment After Excision of Cancer. (Zur Lehre von der Behandlung der Kranken nach Karzinomoperationen.) A. Theilhaber.

194 *Fat-Splitting Ferment in the Blood in Disease. (Ueber das fettspaltende Ferment des Blutserums bei krankhaften Zuständen.) J. Bauer.

195 *Vaginal Cesarean Section. (Zur Frage der Bewertung der Sectio caesarea vaginalis als Entbindungsverfahren.) H. Thaler.

196 Diphtheria of the Middle Ear. (Zur Diphtherie des Mittelohres.) O. Benesi.

197 Elimination of Urobilin and Uric Acid During Hydrotherapy. (Veränderungen in der Elimination des Urobilins und der Harnsäure bei kurzdauernden Kaltwassereinwirkungen.) P. D. Siccardi.

193. **Treatment of Patients After Cancer Operations and Prophylaxis of Cancer in General.**—Theilhaber expatiates on the necessity for combating any tendency to sluggish vitality in the tissues, for instance in the scar left after removal of a cancer, as the low vitality and defective circulation invite malignant degeneration. Consequently to ward off recurrence of cancer after an operation—and the same principles apply also to prophylaxis of cancer in general—the tissues should be vitalized, toned up to their highest pitch of blood and lymph supply, both the local tissues and the organism in general. His definite advice after removal of a cancer is a prolonged change of air, a long stay in the mountains or at the seashore, a change in the entire mode of life, avoidance of worry, a vegetarian diet, courses of exercise, periodically repeated courses of purging, injection of sodium cacodylate, and venesection up to 400 or 500 c.c. twice a year. The third month after the operation he exposes the cicatrix to the Roentgen rays, the high frequency current and diathermy, with thiosinamin and other measures to stimulate the vitality in the cicatrix. If the cancer had been in the uterus, he orders ovarian extract, hot sitz baths and hot douches, with a superficial cancer hot compresses and hot baths. If the general practitioner does not happen to have an electric apparatus, Kirchberg's method might be followed; this consists in local application for twenty minutes of superheated air in the hot-air box, followed by vigorous rubbing and stretching of the scar tissue, drawing the scar tissue up from the tissue beneath, followed by twenty minutes' hyperemic treatment with the vacuum bell, alternating pressure and suction on the part, concluding with gymnastic exercises. An important point to bear in mind is to apply these local stimulating measures to the sound mate organ, especially the mamma, as this is always in peril in case of cancer of one breast. After operations for rectal cancer, a "subaqual internal bath" according to Brosch's technic is advisable. Theilhaber has now for three years been proclaiming the necessity for thus stimulating the vitality of the tissues in prophylaxis of recurrence of cancer, and C. Müller has recently reported excellent results, even to the complete cure of some inoperable cancers, under combined electric treatment, the Roentgen rays, high frequency and diathermy. He feared recurrence in seven cases of cancer of the breast removed two or three years ago, and he applied hyperemic treatment on these principles, beginning eight or ten weeks after the operation, striving to promote the blood-supply in the scar and its vicinity by the above combined electric treatment. There has been no recurrence in any instance. The cicatrix treated by these measures to induce local hyperemia keeps a healthy pink and does not blanch out like ordinary scar tissue. Theilhaber adds in conclusion that the favorable results attained by Zeller with silicic acid suggest that this too might be used as an adjuvant to the other prophylactic measures. (Zeller's experiences were mentioned in the Berlin Letter, THE JOURNAL, Sept. 7, 1912, p. 815.)

194. **The Protective Ferments of the Blood.**—The diagnostic importance of the protective ferments in the blood as a basis for biologic tests was recently emphasized in THE JOURNAL as mentioned in Abstract 173 above. Bauer here summarizes the work in this line to date, and then presents evidence that the proportion of fat-splitting ferment in the blood-serum, the lipase, is a sensitive index of certain pathologic conditions, and, thus may prove useful in differentiating malignant disease at least. Research in this line has been promoted by the technic recently worked out by Rona and Michaelis for estimating the content in lipase by the drop-forming property of the serum. The details of the technic are given in full and the findings are tabulated from seventy-nine sick or well persons tested. Human blood-serum always contains the fat-splitting ferment, but the proportion varies. It is exceptionally low in cancer and in advanced tuberculosis while it is exceptionally high in incipient tuberculosis. In syphilis and exophthalmic goiter the proportion was also found low. Bauer thinks that the response to the antitrypsin test is due to reduction of the fat-splitting ferment rather than to the presence of any special antiferment.

195. **Vaginal Cesarean Section.**—Thaler concludes from the experiences at Schauta's obstetric clinic that vaginal cesarean section requires skilled assistance and that it is particularly dangerous for the child; this outweighs its unmistakable advantages for the mother if the child is viable. He shows by a diagram that an anterior colpohysterotomy to answer its purpose must be carried up quite a distance, to about twice the distance from the internal to the external os. When this is done, the opening thus made is as large as this distance or more; any incisions in the posterior lip of the cervix below the internal os have no effect in enlarging the opening.

Zentralblatt für Chirurgie, Leipsic

September 7, XXXIX, No. 36, pp. 1217-1248

198 Sterilization of Catgut. P. Wolff.

199 Failure of Experimental Grafts of Hair-Covered Skin. (Zur Frage der Ueberpflanzung behaarter Haut.) C. Lauenstein.

200 Plastic Operation on the Nostril with Tissue from Ear. (Zur Frage des Ersatzes von Nasenflügeldefekten durch freie Transplantation aus der Ohrmuschel.) P. Goecke.

September 14, No. 37, pp. 1249-1288

201 Improved Technic for Suturing Transverse Abdomen Incision. (Zur Erleichterung der Naht beim queren Bauchschnitt.) G. K. Perthes.

202 Incision for Operation on Billary Apparatus. (Zur Schnittführung bei Operationen an den Gallenwegen.) G. K Perthes.

Zentralblatt für Gynäkologie, Leipsic

September 7, XXXVI, No. 36, pp. 1177-1208

203 Roentgenoscopy in Diagnosis of Extra-Uterine Pregnancy. (Die Röntgendiagnose der Extra-uterin-Gravidität in späteren Monaten mit abgestorbener Frucht.) E. Zurhelle.

204 Statistics in Regard to Puerperal Fever. (Zur Notwendigkeit der Trennung der Puerperalfieber-Erkrankungen und- Todesfälle post abortum und derjenigen post partum maturum, praematur. und immatur. in der offiziellen Statistik.) Stroeder.

September 14, No. 37, pp. 1209-1240

205 Course of Pregnancy and Delivery with Echinococcus Pelvic Disease and Myomas. (Schwangerschafts- und Geburtsverlauf bei Beckenechinokokkus und Uterus myomatosus.) H. Fries.

206 Connection Between Genital and Mental Disease. (Eierstocks-Uteruskrankheiten und Psychopathien.) L. M. Bossi.

Zentralblatt für innere Medizin, Leipsic

September 14, XXXIII, No. 37, pp. 917-940

207 Primary Melanosarcoma of the Brain with Multiple Sclerosis. G. Bösch.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 3, XXXIII, No. 106, pp. 1105-1112

208 Death from Recurrence of Cerebral Syphilis After Two Injections of Salvarsan. F. Soprana.

September 8, No. 108, pp. 1121-1134

209 Acute Poliomyelitis. (Malattia di Heine-Medin con lesione dei fasci piramidali.) A. Gismondi.

September 10, No. 109, pp. 1135-1144

210 Echinococcus Disease of the Lung. (2 casi di cisti da echinococco del polmone sinistro.) A. Balduzzi.

Policlinico, Rome

September 8, XIX, No. 37, pp. 1333-1368

211 *Intratracheal Insufflation Anesthetization. (La narcosi per insufflazione intratracheale alla Meltzer. 2 casi di applicazione all'uomo.) R. Alessandri.

212 Familial Spastic Spinal Paralysis. G. Mann.

September, Medical Section No. 9, pp. 383-430

213 Cystic Disease of the Spleen. (Su l'origine delle cisti multiple—cisti sierose—della milza.) A. Pepere. Commenced in No. 8.

214 Complications in Acute Infectious Diseases. (Studio clinico sulle complicanze nel decorso di varie malattie infettive acute.) G. Romanelli.

215 Fixation of Complement Test in Malta Fever. (La fissazione del complemento nella febbre mediterranea.) A. Missiroli.

216 Production of Antibodies in Staphylococcus Infection. (Ricerche sulla produzione di corpi immunizzanti nella infezione da stafilococco.) F. Piccininni.

September, Surgical Section No. 9, pp. 385-432

217 Identity of Streptococci. (L'identita degli streptococchi, patogeni per l'uomo, di diversa provenienza.) A. Poggiolini.

218 Experimental Research on Peritoneum Flaps, etc. (Rigenerazione e plastiche del peritoneo.) D. Leonardo. Commenced in No. 8.

211. **Intratracheal Insufflation Anesthesia.**—Alessandrini extols the advantages of Meltzer's method of intratracheal insufflation and reports two cases in which it was applied, proving in one a direct life-saving measure. This was an operation for sarcoma of the nasopharynx, orbit and maxillary sinus which had twice recurred after removal. The patient was a young man; the first symptoms had been noted eight months before. With the Meltzer technic the operation was conducted safely and more radically than had previously been possible. In the second case a tumor in the same region in a boy of 14 had reached such proportions when first seen as to be practically inoperable; the patient was in continuous stupor. As a last resort the tumor was partially removed but the condition did not improve and the boy soon died. Even in this extreme case the ease, simplicity and effectualness of the Meltzer technic were confirmed anew; the breathing and pulse were regular throughout. In the first case, 100 and in the second 70 c.c. of ether were used. The first patient seems to be entirely cured to date.

Riforma Medica, Naples

August 31, XXVIII, No. 35, pp. 953-980

219 Technic for Artificial Pneumothorax. (Intorno al pneumotorace artificiale secondo Forlanini.) M. Ascoli.

220 Primary Epithelioma of Male Urethra. G. Romano.

September 7, No. 36, pp. 981-1008

221 Kala-Azar and Mosquitoes. (Leishmanie e zanzare.) G. Franchini.

222 Present Conceptions of Cholera. (Nozioni patogenetiche sul Colera.) P. Tria.

Revista de Medicina y Cirugia, Havana

September 10, XVII, No. 17, pp. 473-504

223 Factors Llable to Influence Agglutination Test for Typhoid Bacilli. (Identificacion del baclio de Eberth por la aglutinacion.) M. M. Dominguez.

224 *Connection Between Asthma and Conception. (Asmaticas nuliparas y ex-asmaticas multiparas y uniparas.) N. Lugo-Viña.

224. **Connection Between Asthma and Sterility.**—Viña reports three cases which seem to show some connection between asthma and sterility, as the women did not conceive during the years they were subject to asthma. One was 24, twice married, the first time at 18; her husbands were young and healthy. Three months after her first menstruation at 14 she had a severe catarrhal bronchopulmonary affection and asthma developed, the attacks of asthma recurring periodically until the age of 24. The asthma then subsided, and within the next seven years she passed through three normal pregnancies; one of the children, a girl, had congenital asthma. In the second case the woman by the age of 19 had borne two healthy children. A severe fright at this time from a fire in the house brought on asthma, and there was no further conception during the four years the asthma persisted. After it subsided she had five more children in the course of seven years. Viña insists that conditions were the same in all the cases throughout so that the asthma or the causes inducing it seemed to be the only disturbing element.

Semana Medica, Buenos Aires

August 15, XIX, No. 33, pp. 301-348

225 Tobacco Intoxication and Ether Addiction. (Los venenos sociales.) V. Delfino.

Norsk Magazin for Lægevidenskaben, Christiania

September, LXXIII, No. 9, pp. 1269-1404

226 *Intermittent Circumscribed Edema. (Begrænset intermitterende ødem og intermitterende hydrops articulorum.) S. Bull.

227 Polyps in Nasopharynx. (Om de saakaldte fibrøse næsesvelgpolyper.) V. Uchermann.

228 *Polycythemia. (Om polyglobuli.) A. Sunde.

229 *Tetanus from Lung Abscess. (Tetanusinfektion fra lungeabsces.) K. Motzfeldt.

230 Torsion of Enlarged Sigmoid Flexure. (Volvulus av en megasigmoideum.) S. Widerøe.

231 *Cancer in the Prisons and Workhouses of Norway. (Kræftdødeligheten i Norges lukkede anstalter.) M. Sægaard.

226. **Intermittent Circumscribed Edema.**—Bull reports in detail ten cases of angioneurotic edema, the age of the patients ranging from 2 to 69, but the majority were women between 16 and 46. One patient was a working man of 36 who since the age of 15 had suffered from a chronic synovitis in various joints, especially both knees. At 30 the angioneurotic edema developed in first one knee and then the other, subsiding and returning; finally the edema occurred in both knees together. The temperature rose slightly with the attacks. The attack was generally ushered in with transient sciatica which subsided afterward. Other neuroses such as Basedow symptoms, hysteria, etc., were noticed in some cases, and the attacks were generally brought on by some nervous disturbance, the menopause, menstruation, severe chilling or emotions. Excess in liquor drinking seemed occasionally a factor, and abstention from alcohol arrested the tendency; digestive disturbances were evidently responsible in others, and the attacks did not recur when the stomach was functioning normally. The affection may be inherited or acquired; all agree that it is essentially chronic. Involvement of the larynx is the only actual danger from it. Arsenic seems to have benefited in some cases, as also aspirin, ergot, ichthyol, hydrotherapy and the induced current. Scarification has sometimes proved useful for edema of the glottis, and tracheotomy has been successfully done several times. Apert and Delille's patients wore a tracheotomy tube constantly. Intermittent hydrarthrosis seems to be merely the localization of the acute edema in a joint; it has often been treated by surgical measures and with good results in certain cases.

228. **Polycythemia.**—Sunde gives the particulars of a case of polycythemia with enlargement of the spleen in a man of 55; also a case of polycythemia with very high blood-pressure, and two other cases in which the polycythemia was secondary to cancer or heart disease. He also tabulates the details of fifteen cases of heart or kidney disease in which the number of reds was unusually high. In two of these secondary cases the number of reds dropped when the diuresis increased and climbed up when the diuresis declined. In some of the cases the reds dropped permanently to the normal figure when asystolia was corrected. In treatment of the essential form with enlargement of the spleen, the diet should be mainly milk and vegetables, and otherwise regulated to ward off the tendency to apoplexy. No benefit from roentgenotherapy was observed in the cases reported. An insignificant reduction in the number of reds followed four repetitions of venesection, withdrawing 300 gm. of blood and once 750 gm., combined with saline infusion; Nature seems to resort to spontaneous hemorrhages as a safety valve. The patients must be warned against overexertion and abuse of tobacco and alcohol. Iodin preparations seem to reduce the viscosity of the blood. In the case without enlargement of the spleen but with exceptionally high blood-pressure, the highest number of reds coincided with the highest blood-pressure. The bone marrow in the femur showed marked hyperplasia and was deep red.

229. **Tetanus from Lung Abscess.**—Motzfeldt's patient was a previously healthy young man who developed fatal tetanus during convalescence from pneumonia. An abscess was found in the lung, and he assumes that infection must have occurred from the air through the abscess, as nothing else could be found to explain it.

231. **Cancer in the Penal Institutions of Norway.**—Sægaard reports that no cases of cancer were found among the forty-five deaths at one prison in the last fifty years or more; only twelve cases in another prison with 160 deaths—a proportion corresponding to the general cancer mortality outside. In a third prison the proportion of cancer cases was 22.6 per cent. of the thirty-one deaths. The total cancer mortality was thus 9.4 per cent., while in 780 deaths in The Bergen *arbeidsanstalt* only 6.3 per cent. were from cancer and in the 815 in the leper asylums, only 1.8 per cent. The cancers in the workhouse were mostly superficial; the majority of the inmates may be regarded as having reached the cancer age. The low proportion of malignant disease confirms the assumption that cancer is preeminently a disease of the well-to-do, especially gastro-intestinal cancer.

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